M-2000/2020

FS-25/80/HU-25

SERVICE MANUAL

Ver. 1.1 2005. 08

US Model
Canadian Model
AEP Model
UK Model
Australian Model

- M-2000/2020 are composed of following models.

COMPONENT MODEL NAME

	M-2000	M-2020
FOOT CONTROL UNIT	FS-25/80	
HAND CONTROL UNIT	—	HU-25

Model Name Using Similar Mechanism	New
Tape Transport Mechanism Type	MB-2000-58

SPECIFICATIONS

Tape	MICROCASSETTE™ (normal position type)
Track system	2-track 1-channel monaural
Tape speed	2.4 cm/sec. (15/16 ips), 1.2 cm/sec. (15/32 ips)
Tape speed control	–10% to +50%
Auto back space	Approx. 0/1/3 sec.
Frequency response	250 – 4,000 Hz (at 2.4 cm position)
Speaker	5 cm (2 inches) dia.
Power output	300 mW
Input	MIC (PLUG IN POWER): minijack, sensitivity 0.3 mV for 3 kilohm or lower impedance
Output	EARPHONE: minijack, for an 8 – 300 ohm earphone
Power requirements	DC IN 9 V jack accepts the supplied AC power adaptor
Power consumption	600 mA
Dimensions	Approx. 133 × 61.5 × 230 mm (w/h/d) (5 1/4 × 2 1/2 × 9 1/8 inches) not incl. projecting parts and controls
Weight	Approx. 0.8 kg (1 lb 12 oz)
Supplied accessories	Headphone (1) Foot control unit (1) Hand control unit (1) (M-2020) Cradle (1) (M-2020) AC power adaptor (1)

Design and specifications are subject to change without notice.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

MICROCASSETTE ™ TRANSCRIBER

9-953-888-14
2005H04-1
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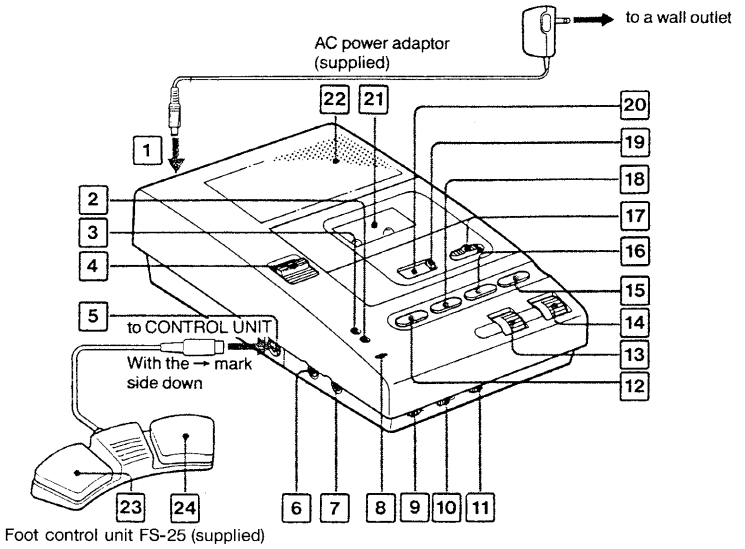
Personal Audio Group
Published by Sony Engineering Corporation

SONY®

1-1. LOCATION AND FUNCTION OF CONTROLS



Foot control unit FS-25 (supplied)

1 **DC IN 9 V jack (external power input) jack**

2 **OPR (operation) indicator**
The indicator illuminates during tape operation.

3 **REC (record) indicator**
The indicator illuminates during recording.

4 **⏏ EJECT (cassette eject) lever**

5 **CONTROL UNIT connector**

6 **MIC (external microphone) (PLUG IN POWER)**

7 **EARPHONE jack (minijack)**

8 **MIC (built-in microphone)**

9 **SPEED selector**
2.4 cm: A 60-minute recording can be made using both sides of the MC-60 Microcassette. This setting produces optimum sound and is recommended for normal use.
1.2 cm: A 120-minute recording can be made using both sides of the MC-60.

10 **REVERSE TIME (0/1/3) (autobackspace time) control**

11 **TONE control**
Slide toward H (high) to reinforce treble, and L (low) to weaken it.

12 **◀◀REW (rewind) button**

13 **SPEED CONTROL (tape speed control)**

14 **VOLUME control**

15 **▶▶ FF (fast forward) button**

16 **▶ PLAY button**

17 **Recording (STOP/REC) switch**

18 **■ STOP button**

19 **RESET button**
Press to reset the counters to zero.

20 **Tape counter**

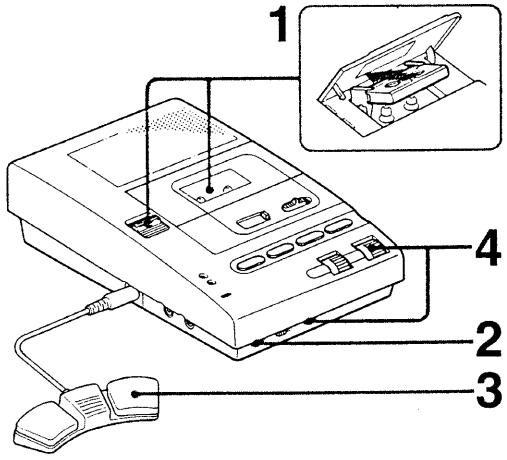
21 **Cassette compartment**

22 **Built-in speaker**

23 **Rewind pedal**

24 **Playback pedal**

1-2. TRANSCRIBING



Before operating the unit, connect the AC power adaptor to a wall outlet.

1 Slide EJECT and insert a cassette.

2 Set SPEED to the same tape speed as that used for recording.

3 Keep the right side of the pedal depressed to listen to the tape.

4 Adjust VOLUME and TONE.

To stop the tape, release the pedal.
You can control the unit with the buttons on itself as well.

Use of foot control unit
The foot control unit leaves your hands free, enabling you to control this transcriber with your foot.

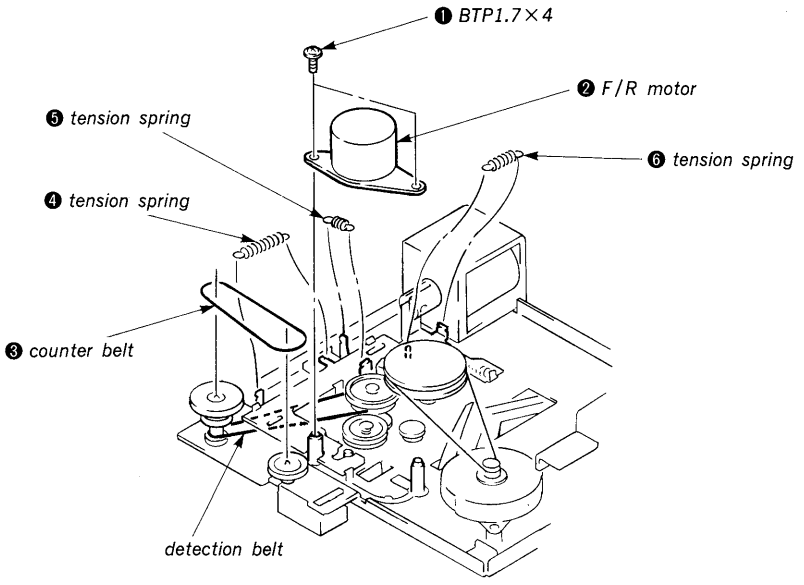
Auto backspace
The tape rewinds a little each time it is stopped and the last few recorded words can be reviewed when you resume listening. Adjust REVERSE TIME to the desired length (1 position: 1 second, 3 position: 3 seconds). At the 0 position, the tape stops without rewinding at all. This functions only when the foot control unit is used.

Speed control
The tape speed is adjustable with SPEED CONTROL. The tape runs at normal speed with the control set to the center click position.

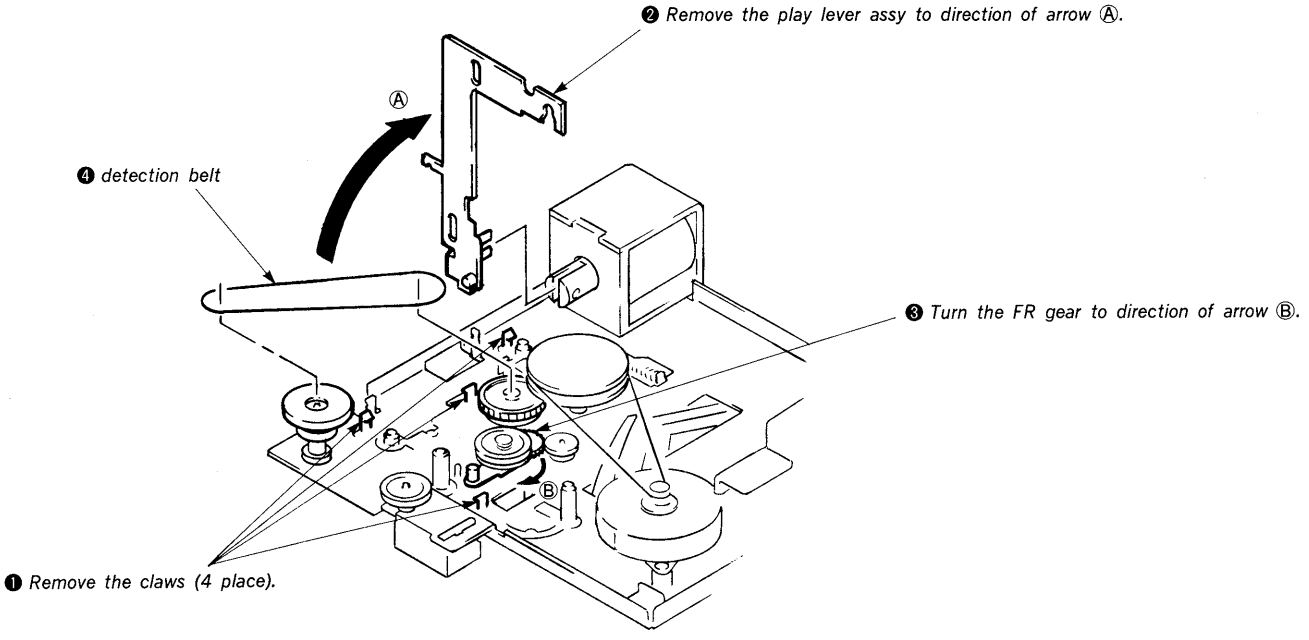
SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

2-1. EXCHANGE OF DETECTION BELT (1)



2-2. EXCHANGE OF DETECTION BELT (2)


❷ Remove the play lever assy to direction of arrow Ⓐ.
Ⓐ
❹ detection belt
❸ Turn the FR gear to direction of arrow Ⓑ.
Ⓑ
❶ Remove the claws (4 place).

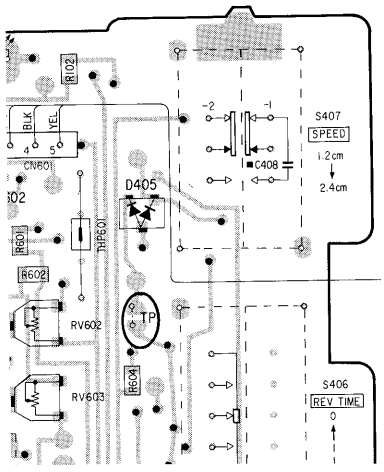
SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback/erase head　　pinch roller
   rubber belts　　capstan
   idlers
2. Demagnetize the record/playback/erase head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Power Supply Voltage: 9V dc

Note: When performing mechanism deck rotation check opening the main board, solder the TP portion.
After the check, unsolder TP portion.



Torque Measurement

Torque	Meter Reading	Torque Meter
Forward	8—25g•cm (0.11—0.35oz•inch)	CQ-103M
Fast Forward and Rewind	40—95g•cm (0.56—1.32oz•inch)	CQ-201M

Tape Tension Measurement

Meter	Meter Reading
CQ-403M	More than 40g (1.41oz)

SECTION 4
ELECTRICAL ADJUSTMENTS

PRECAUTION

1. The adjustments should be performed in the order given in this service manual.
2. Switches and controls should be set as follows unless otherwise specified.
   - VOLUME (RV101) control: max
   - SPEED CONTROL (RV601): mechanical mid
   - TONE (S101) switch: HIGH
   - REC (S405) switch: STOP

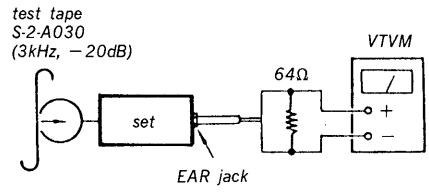
Test Tape

Type	Signal	Used for
S-2-A030	3kHz, −20dB	head azimuth adjustment
WS-24	3kHz, −10dB	tape speed adjustment

Record/playback/erase Head Azimuth Adjustment

Procedure:

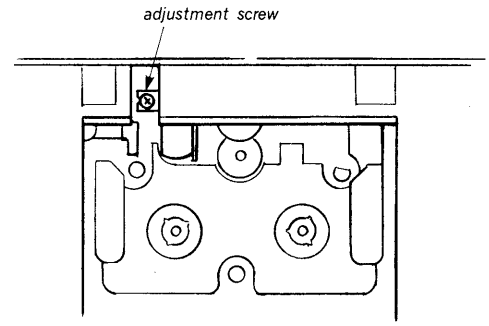
Mode: playback



Turn the adjustment screw to obtain the maximum reading on VTVM.

Note: Finish the screw adjustment with a turn in the clockwise direction.
After the adjustment, apply suitable locking compound to the adjustment screw.

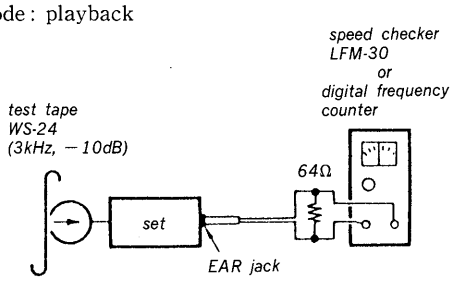
Adjustment Location:



Tape Speed Adjustment

Procedure :

Mode : playback



- Perform 2.4cm/s normal speed adjustment before 1.2cm/s normal speed adjustment.

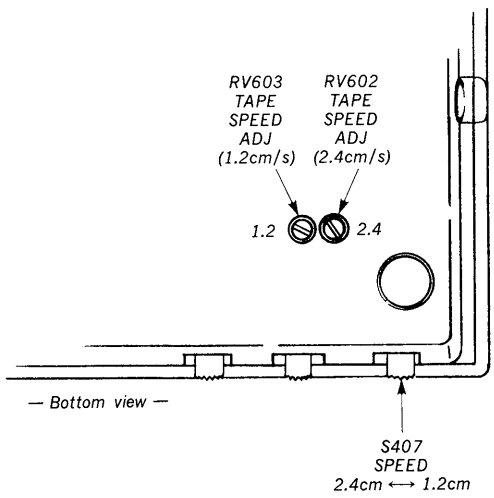
Normal speed	SPEED (S407)	Adjustment point	Frequency counter
2.4cm/s	2.4cm	RV602	2,985−3,015Hz
1.2cm/s	1.2cm	RV603	1,492−1,508Hz

Confirm that the reading on digital frequency counter is specification value as shown below.

SPEED CONTROL (RV601)	SPEED (S407)	Frequency counter
max	2.4cm	more than 4,500Hz
	1.2cm	more than 2,150Hz
min	2.4cm	less than 2,500Hz
	1.2cm	less than 1,250Hz

Frequency difference between the beginning and the end of the tape should be within ±1% (2.4cm/s normal speed : 30Hz, 1.2cm/s normal speed : 15Hz).

Adjustment Location :



SECTION 5
DIAGRAMS

5-1. SEMICONDUCTOR LEAD LAYOUTS

RC7805FA

μPD75402GB-514-3B4

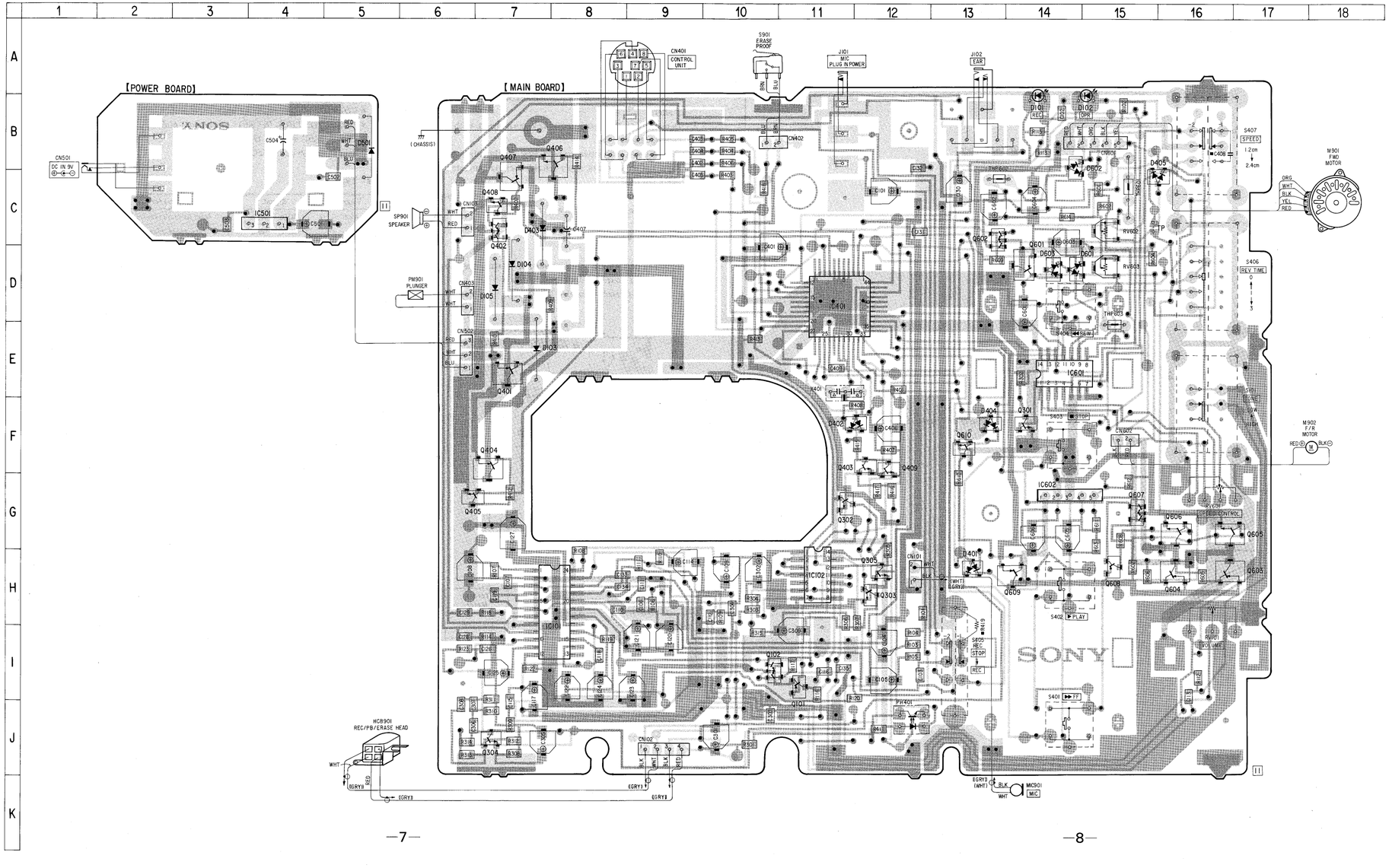
10E2

● Semiconductor Location

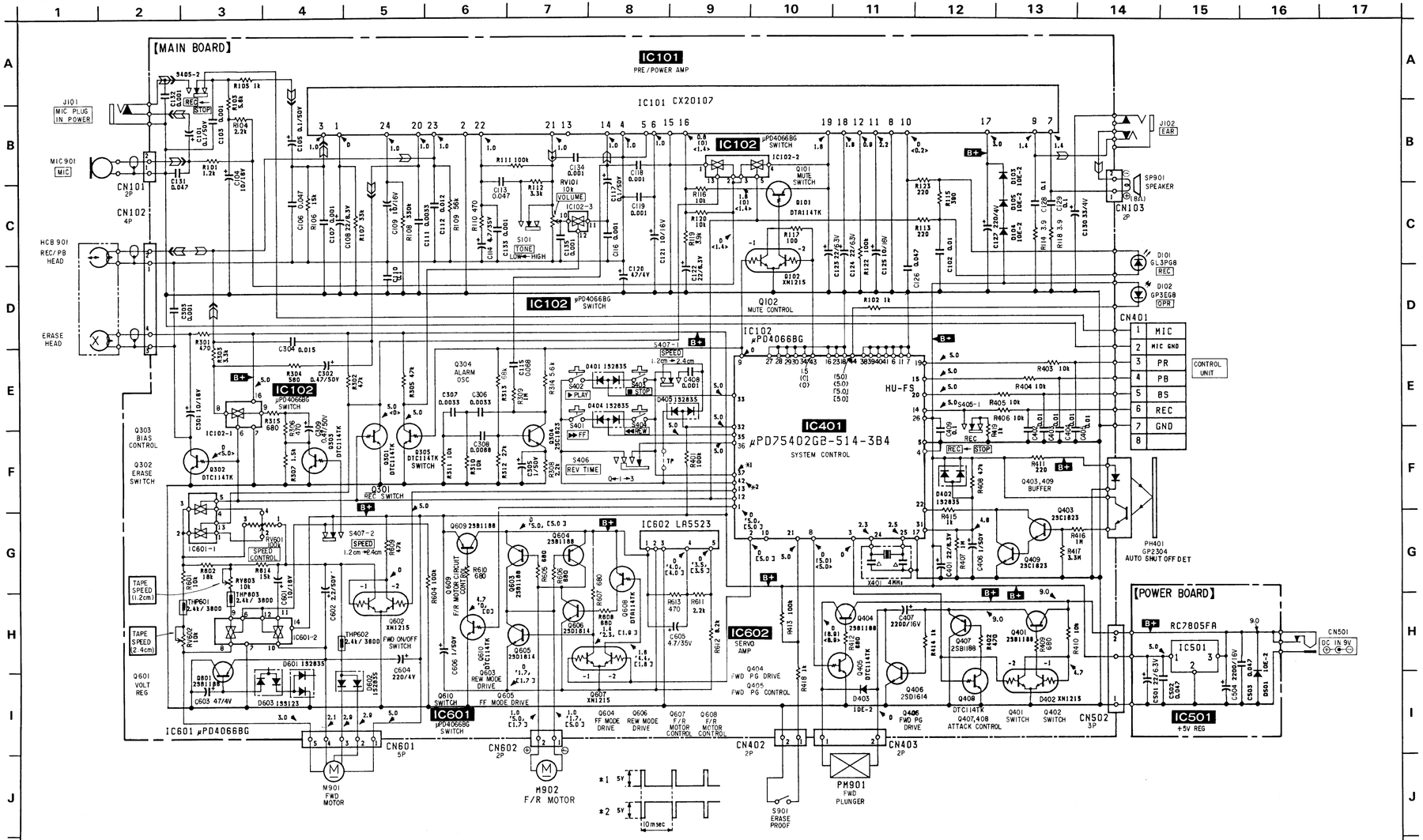
Ref. No.	Location	Ref. No.	Location
D101	B-14	Q304	J-7
D102	B-15	Q305	H-12
D103	E-7	Q401	E-7
D104	D-7	Q402	C-7
D105	D-7	Q403	F-12
D401	H-13	Q404	F-7
D402	F-11	Q405	G-6
D403	C-7	Q406	B-8
D404	F-13	Q407	B-7
D405	C-15	Q408	C-7
D501	B-5	Q409	F-12
D601	D-14	Q601	D-14
D602	B-14	Q602	C-13
D603	D-14	Q603	H-17
		Q604	H-16
IC101	H-8	Q605	G-17
IC102	H-11	Q606	G-16
IC401	D-11	Q607	G-15
IC501	C-4	Q608	H-15
IC601	E-14	Q609	H-14
IC602	G-14	Q610	F-13
PH401	J-12		
Q101	I-11		
Q102	I-10		
Q301	F-14		
Q302	G-11		
Q303	H-12		

- ● ○—— : parts extracted from the component side.
- ● ■ : parts mounted on the conductor side.
- ● ● : Through hole.
- ● ▨ : Pattern on the side which is seen.
- ○ ▨ : Pattern of the rear side.

5-2. PRINTED WIRING BOARDS

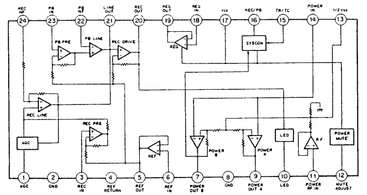


5-3. SCHEMATIC DIAGRAMS

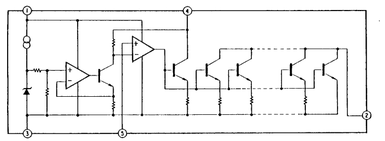


• IC Block Diagram

IC101 CX20107



IC602 LA5523



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- Power voltage is dc 9 V and fed with regulated dc power supply from external power voltage jack.
- Voltage are dc with respect to ground under no-signal conditions.
  no mark : PLAY
  < > : REC
  ⌜ ⌟ : FF
  [ ] : REW
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ▷ : PB
  ▷▷ : REC

5-4. EXPLANATION OF IC401 (μPD75402GB-514-3B4)

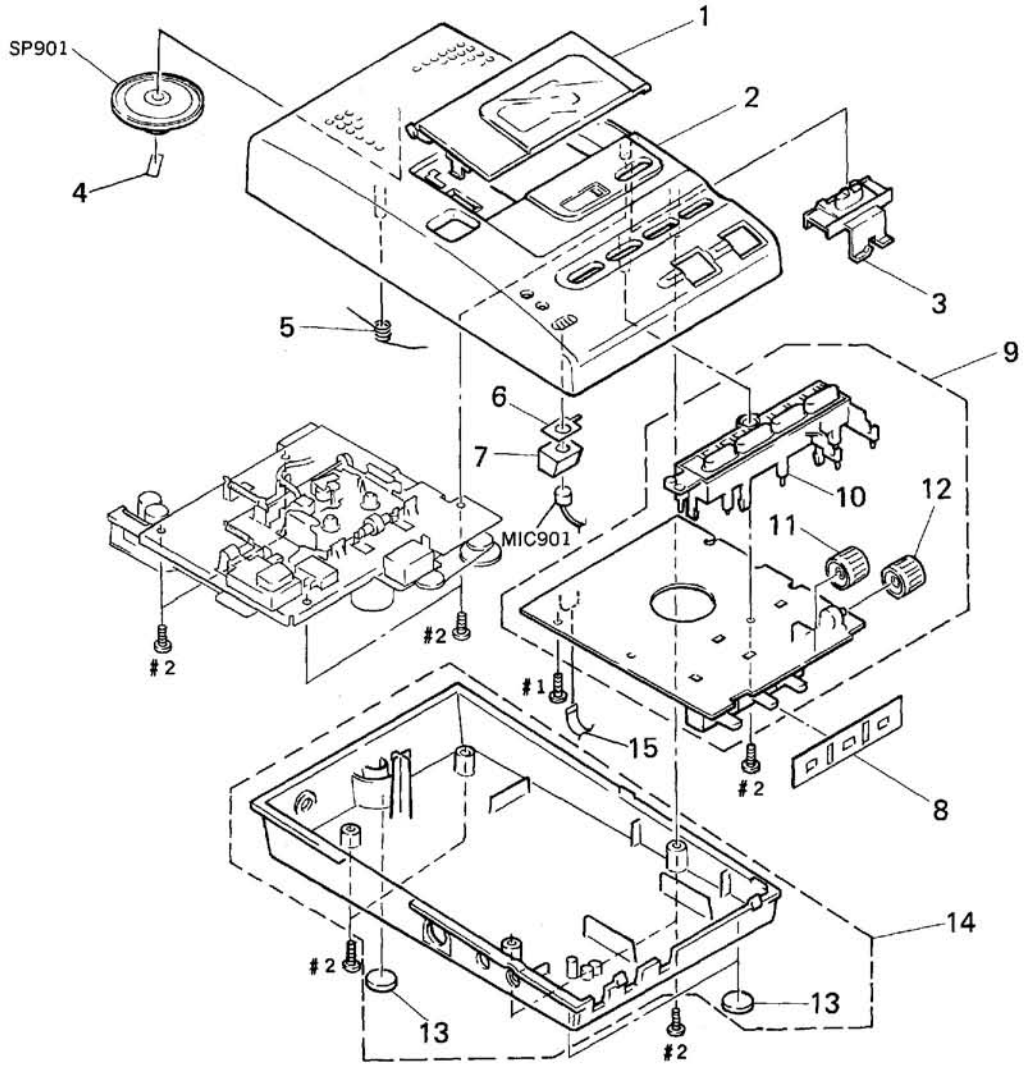
Pin No.	Symbol	I/O	Description
1	P30	O	FF/REW motor ON/OFF signal
2	P31	O	FF/REW motor normal turn/reverse turn control signal
3	P32	O	Plunger suction signal
4	NC	—	
5	V_{SS}	—	GND
6	NC	—	
7	NC	—	
8	P33	O	Plunger holding signal
9	P60	O	Alarm signal
10	P61	—	
11	NC	—	
12	P62	O	REC signal
13	P63	O	FWD motor ON/OFF signal
14	P20	I/O	REC key detection
15	P21	I	PLAY key
16	NC	—	
17	V_{SS}	—	GND
18	NC	—	
19	P22/PCL	I/O	Partial reverse key detection
20	P23	I/O	Back space key detection
21	P10/INT0	I/O	Erase proof detection
22	P12/INT2	I	Reel turn detecting photosensor signal
23	NC	—	
24	X2	I	clock
25	X1	I	clock
26	V_{DD}	—	Power supply
27	NC	—	
28	NC	—	
29	NC	—	
30	NC	—	
31	$\overline{\text{RESET}}$	I	Reset signal
32	P00	I	Matrix system, key detection PLAY STOP FF REW, TAPE SPEED 1.2/2.4 REV TIME 0/1/3 TP (Pattern bridge stops END detection, and it Permits repair and operational check while floating the board.)
33	P01/$\overline{\text{SCK}}$		
35	P02/SO/SB0		
36	P03/SI		
37	P50	O	
42	P51		
34	NC	—	
38	NC	—	
39	NC	—	
40	NC	—	
41	NC	—	
43	P52	O	Mute signal
44	P53	O	Operation LED lighting

SECTION 6
EXPLODED VIEWS

NOTE:

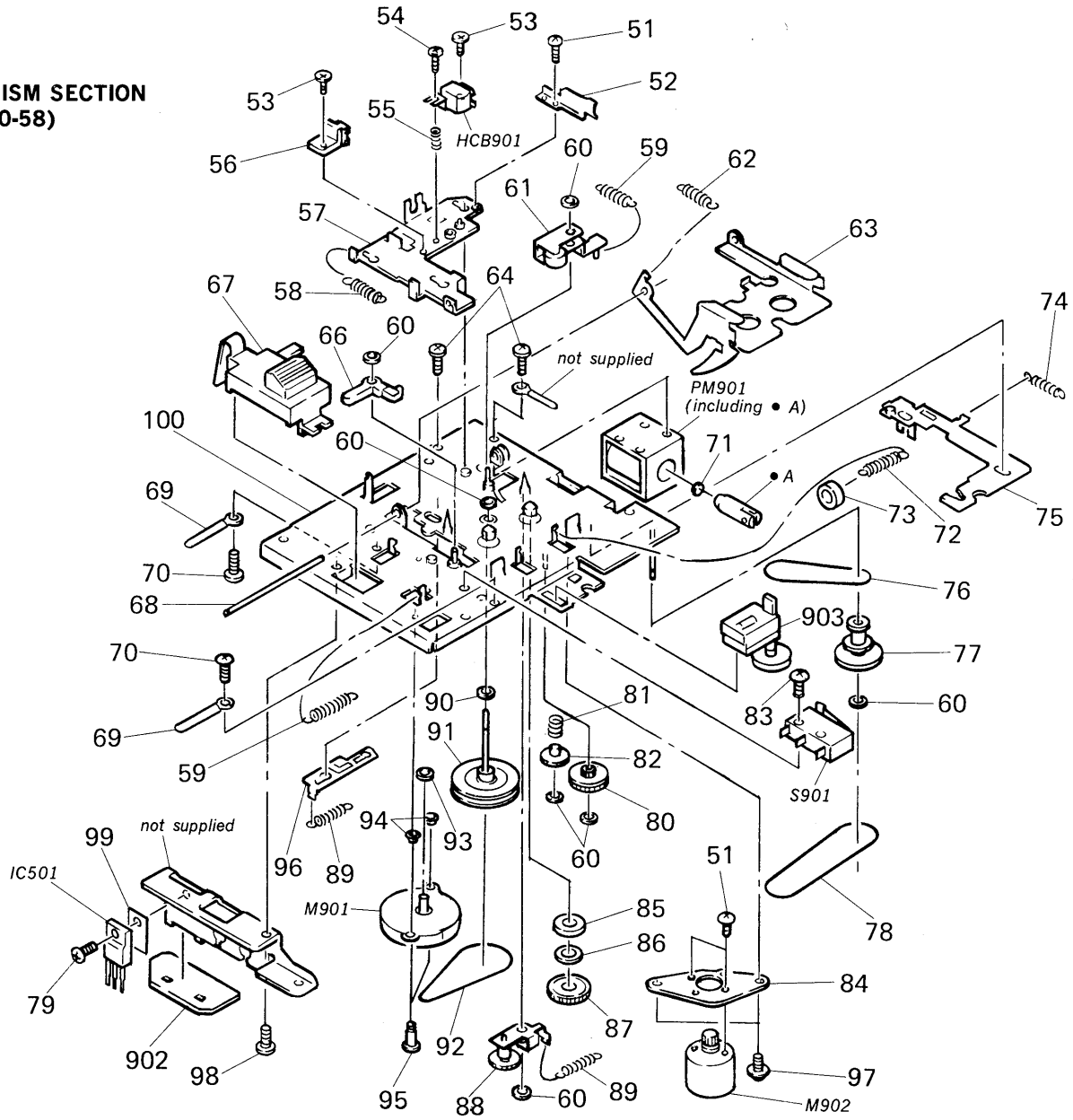
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts Color

6-1. CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	X-3353-902-1	LID ASSY, CASSETTE	
2	X-3353-901-1	CABINET (UPPER) ASSY (2000)	
2	X-3363-743-1	CABINET (UPPER) ASSY (2020)	
3	3-353-902-01	KNOB (REC)	
4	4-017-441-01	CUSHION (B)	
5	3-335-193-01	SPRING, CASSETTE	
* 6	3-353-905-01	SHEET, ADHESIVE, MICROPHONE	
* 7	3-353-974-01	CUSHION (MICROPHONE)	
8	3-353-906-01	COVER, SWITCH	
* 9	A-3016-785-A	MAIN BOARD, COMPLETE	
10	3-353-904-01	BUTTON	
11	3-353-973-01	KNOB (SPEED CONTROL)	
12	3-353-916-01	KNOB (VOLUME)	
13	3-319-288-01	FOOT	
14	X-3353-912-1	CABINET (LOWER) ASSY	
15	1-769-840-11	WIRE (FLAT TYPE) (5 CORE)	
MIC901	1-542-092-11	MICROPHONE, ELECTRET CONDENSER (MIC)	
SP901	1-503-637-11	SPEAKER (5cm)	

6-2. MECHANISM SECTION (MB-2000-58)



Ref.No	Part No.	Description	Remarks
51	7-627-552-28	SCREW,PRECISION +P 1.7X2	
52	*3-353-957-01	GUIDE, TAPE	
53	3-318-205-01	SCREW (1.7X2.5)	
54	3-353-979-01	SCREW	
55	3-353-958-01	SPRING, COMPRESSION	
56	*3-353-959-01	GUIDE (S), TAPE	
57	*X-3353-909-1	CHASSIS ASSY, HEAD	
58	3-353-964-01	SPRING, TENSION	
59	3-353-953-01	SPRING, TENSION	
60	3-578-242-11	WASHER	
61	X-3353-906-1	PINCH LEVER ASSY	
62	3-335-155-01	SPRING, TENSION(POWER TENSION)	
63	X-3335-109-1	HOLDER COMPLETE ASSY, CASSETTE	
64	7-682-646-09	SCREW +PS 3X5	
66	*3-335-167-01	LEVER, ERASING PROTECTION	
67	3-353-903-01	KNOB (EJECT)	
68	*3-353-960-01	PIN, PARALLEL	
69	*2-277-426-01	CLAMP	
70	7-621-255-15	SCREW +P 2X3	
71	4-879-274-41	SPACER	
72	3-353-956-01	SPRING, TENSION	
73	*3-335-116-01	ROLLER, EMP	
74	3-353-954-01	SPRING, TENSION	
75	*X-3353-908-1	LEVER ASSY, PLAY	
76	3-353-951-01	BELT, DETECTION	
77	X-3353-911-1	PULLEY (RELAY) ASSY	
78	3-353-952-01	BELT, COUNTER	
79	7-621-770-67	SCREW B 2.6X6	
80	X-3335-135-1	LIMITER ASSY, FR	
81	3-335-230-02	SPRING, COMPRESSION	

Ref.No	Part No.	Description	Remarks
82	3-335-121-01	GEAR, FR	
83	7-621-257-55	SCREW +P 2.3X8	
84	*3-353-962-01	BRACKET (FR MOTOR)	
85	3-335-126-01	PLATE, MAGNET	
86	3-335-123-01	SPACER (M) (T=0.1)	
86	3-335-123-11	SPACER (M) (T=0.2)	
86	3-335-123-21	SPACER (M) (T=0.3)	
87	X-3335-107-1	LIMITER (B) ASSY, FWD	
88	X-3353-907-1	GEAR ASSY, IDLER	
89	3-353-955-01	SPRING, TENSION	
90	3-701-436-01	WASHER, 1.6	
91	X-3353-910-1	WHEEL ASSY, CAPSTAN	
92	3-353-963-01	BELT, CAPSTAN	
93	3-353-972-01	RUBBER, BUSHING	
94	*3-335-208-01	CUSHION, MOTOR	
95	3-353-961-01	SCREW (M1.4), STEP	
96	*3-353-950-01	LEVER (SAFETY)	
97	3-342-759-41	SCREW (B1.7X4), TAPPING	
98	7-621-770-87	SCREW +P 2.6X5	
99	4-391-336-01	SHEET, INSULATING	
100	*X-3353-903-1	CHASSIS (OUTSERT) ASSY	
902	*1-631-078-11	PC BOARD, POWER	
903	1-548-599-21	COUNTER, TAPE (SMALL TYPE)	
IC501	8-759-982-05	IC RC7805FA	
M901	1-541-691-11	MOTOR (FWD)	
M902	1-541-685-11	MOTOR, DC (F/R)	
PM901	1-454-486-11	SOLENOID, PLUNGER	
S901	1-554-385-00	SWITCH, MICRO (ERASE PROOF)	
HCB901	1-543-638-11	HEAD, MAGNETIC (REC/PB/ERASE)	

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No	Part No.	Description			
901	*A-3015-774-A	MOUNTED PCB, MAIN			
902	*1-631-078-11	PC BOARD, POWER			
903	1-548-599-21	COUNTER, TAPE (SMALL TYPE)			
		CAPACITOR			
C101	1-126-187-11	ELECT CHIP	0.1MF	20%	50V
C102	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C103	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C104	1-124-779-00	ELECT CHIP	10MF	20%	16V
C105	1-126-187-11	ELECT CHIP	0.1MF	20%	50V
C106	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C107	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C108	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C109	1-124-779-00	ELECT CHIP	10MF	20%	16V
C110	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C111	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C112	1-163-022-00	CERAMIC CHIP	0.012MF	10%	50V
C113	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C114	1-126-198-11	ELECT CHIP	4.7MF	20%	35V
C115	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C116	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C117	1-126-187-11	ELECT CHIP	0.1MF	20%	50V
C118	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C119	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C120	1-126-208-11	ELECT CHIP	47MF	20%	4V
C121	1-124-779-00	ELECT CHIP	10MF	20%	16V
C122	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C123	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C124	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C125	1-124-779-00	ELECT CHIP	10MF	20%	16V
C126	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C127	1-126-246-11	ELECT CHIP	220MF	20%	4V
C128	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C129	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C130	1-126-207-11	ELECT CHIP	33MF	20%	4V
C131	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C132	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C133	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C134	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C135	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C301	1-124-779-00	ELECT CHIP	10MF	20%	16V
C302	1-126-191-11	ELECT CHIP	0.47MF	20%	50V
C303	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C304	1-163-023-00	CERAMIC CHIP	0.015MF	10%	50V
C305	1-126-193-11	ELECT CHIP	1MF	20%	50V
C306	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C307	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C308	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C309	1-126-191-11	ELECT CHIP	0.47MF	20%	50V
C401	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C402	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C403	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C404	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C405	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C406	1-126-193-11	ELECT CHIP	1MF	20%	50V
C407	1-124-556-11	ELECT	2200MF	20%	16V
C408	1-102-074-00	CERAMIC	0.001MF	10%	50V
C409	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C501	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C502	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C503	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C504	1-124-556-11	ELECT	2200MF	20%	16V
C601	1-124-779-00	ELECT CHIP	10MF	20%	16V
C602	1-126-195-11	ELECT CHIP	2.2MF	20%	50V
C603	1-126-208-11	ELECT CHIP	47MF	20%	4V
C604	1-126-246-11	ELECT CHIP	220MF	20%	4V
C605	1-126-198-11	ELECT CHIP	4.7MF	20%	35V
C606	1-126-193-11	ELECT CHIP	1MF	20%	50V
CN101	*1-506-467-11	PIN, CONNECTOR 2P			
CN102	*1-506-469-11	PIN, CONNECTOR 4P			
CN103	*1-506-467-11	PIN, CONNECTOR 2P			
CN401	1-568-229-11	SOCKET, CONNECTOR 8P (CONTROL UNIT)			
CN402	*1-506-467-11	PIN, CONNECTOR 2P			
CN403	*1-506-467-11	PIN, CONNECTOR 2P			
CN501	1-562-961-11	JACK (DC IN 9V)			
CN502	*1-506-468-11	PIN, CONNECTOR 3P			
CN601	*1-506-470-11	PIN, CONNECTOR 5P			
CN602	*1-506-467-11	PIN, CONNECTOR 2P			
D101	8-719-812-41	DIODE TLR124			
D102	8-719-938-67	DIODE GL3EG8			
D103	8-719-200-02	DIODE 10E2			
D104	8-719-200-02	DIODE 10E2			
D105	8-719-200-02	DIODE 10E2			
D401	8-719-100-03	DIODE 1S2835			
D402	8-719-100-03	DIODE 1S2835			
D403	8-719-200-02	DIODE 10E2			
D404	8-719-100-03	DIODE 1S2835			
D405	8-719-100-03	DIODE 1S2835			
D501	8-719-200-02	DIODE 10E2			
D601	8-719-100-03	DIODE 1S2835			
D602	8-719-100-03	DIODE 1S2835			
D603	8-719-800-76	DIODE 1SS123			
IC101	8-752-010-71	IC CX20107			
IC102	8-759-106-23	IC UPD4066BG			
IC401	8-759-146-07	IC UPD75402GB-514-3B4			
IC501	8-759-982-05	IC RC7805FA			
IC601	8-759-106-23	IC UPD4066BG			
IC602	8-759-801-12	IC LA5523			
J101	1-566-740-11	JACK (MIC PLUG IN POWER)			
J102	1-507-896-00	JACK, HEADPHONE (EAR)			
PH401	8-719-913-40	DIODE GP-2S04			
Q101	8-729-900-51	TRANSISTOR DTA114TK			
Q102	8-729-403-17	TRANSISTOR XN1215			
Q301	8-729-902-99	TRANSISTOR DTC114TK			
Q302	8-729-902-99	TRANSISTOR DTC114TK			
Q303	8-729-902-99	TRANSISTOR DTC114TK			
Q304	8-729-100-66	TRANSISTOR 2SC1623-L6			

Ref.No	Part No.	Description
Q305	8-729-902-99	TRANSISTOR DTC114TK
Q401	8-729-807-33	TRANSISTOR 2SB1123
Q402	8-729-403-17	TRANSISTOR XN1215
Q403	8-729-100-66	TRANSISTOR 2SC1623-L6
Q404	8-729-807-33	TRANSISTOR 2SB1123
Q405	8-729-902-99	TRANSISTOR DTC114TK
Q406	8-729-807-16	TRANSISTOR 2SD1621-R
Q407	8-729-807-33	TRANSISTOR 2SB1123
Q408	8-729-902-99	TRANSISTOR DTC114TK
Q409	8-729-100-66	TRANSISTOR 2SC1623-L6
Q601	8-729-807-33	TRANSISTOR 2SB1123
Q602	8-729-403-17	TRANSISTOR XN1215
Q603	8-729-807-33	TRANSISTOR 2SB1123
Q604	8-729-807-33	TRANSISTOR 2SB1123
Q605	8-729-807-16	TRANSISTOR 2SD1621-R
Q606	8-729-807-16	TRANSISTOR 2SD1621-R
Q607	8-729-403-17	TRANSISTOR XN1215
Q608	8-729-900-51	TRANSISTOR DTA114TK
Q609	8-729-807-33	TRANSISTOR 2SB1123
Q610	8-729-902-99	TRANSISTOR DTC114TK

RESISTOR

R101	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R102	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R103	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R104	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R105	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R106	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R107	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R108	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R109	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R110	1-216-041-00	METAL GLAZE	470	5%	1/10W
R111	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R112	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R113	1-216-033-00	METAL GLAZE	220	5%	1/10W
R114	1-216-306-11	METAL GLAZE	3.9	5%	1/10W
R115	1-216-039-00	METAL GLAZE	390	5%	1/10W
R116	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R117	1-216-025-00	METAL GLAZE	100	5%	1/10W
R118	1-216-306-11	METAL GLAZE	3.9	5%	1/10W
R119	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R120	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R122	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R123	1-216-033-00	METAL GLAZE	220	5%	1/10W
R301	1-216-041-00	METAL GLAZE	470	5%	1/10W
R302	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R303	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R304	1-216-043-00	METAL GLAZE	560	5%	1/10W
R305	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R306	1-216-041-00	METAL GLAZE	470	5%	1/10W
R307	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R308	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R309	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R310	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R311	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R312	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R313	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R314	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R315	1-216-045-00	METAL GLAZE	680	5%	1/10W
R401	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R402	1-216-041-00	METAL GLAZE	470	5%	1/10W
R403	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R404	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R405	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R406	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R407	1-216-121-00	METAL GLAZE	1M	5%	1/10W

Ref.No	Part No.	Description			
R408	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R409	1-216-045-00	METAL GLAZE	680	5%	1/10W
R410	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R411	1-216-033-00	METAL GLAZE	220	5%	1/10W
R412	1-216-045-00	METAL GLAZE	680	5%	1/10W
R413	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R414	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R415	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R416	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R417	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R418	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R419	1-249-417-11	CARBON	1K	5%	1/4W
R601	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R602	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R604	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R605	1-216-045-00	METAL GLAZE	680	5%	1/10W
R606	1-216-045-00	METAL GLAZE	680	5%	1/10W
R607	1-216-045-00	METAL GLAZE	680	5%	1/10W
R608	1-216-045-00	METAL GLAZE	680	5%	1/10W
R609	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R610	1-216-045-00	METAL GLAZE	680	5%	1/10W
R611	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R612	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W
R613	1-216-041-00	METAL GLAZE	470	5%	1/10W
R614	1-216-077-00	METAL GLAZE	15K	5%	1/10W

RV101	1-238-646-11	RES, VAR, CARBON 10K (VOLUME)
RV601	1-238-627-11	RES, VAR, CARBON 100K (SPEED CONTROL)
RV602	1-238-676-11	RES, ADJ, METAL GLAZE 10K
RV603	1-238-676-11	RES, ADJ, METAL GLAZE 10K
S101	1-552-334-00	SWITCH, BAND CHANGER (TONE)
S401	1-571-528-11	SWITCH, KEY BOARD (▶▶FF)
S402	1-571-528-11	SWITCH, KEY BOARD (▶PLAY)
S403	1-571-528-11	SWITCH, KEY BOARD (■STOP)
S404	1-571-528-11	SWITCH, KEY BOARD (◀◀REW)
S405	1-554-481-00	SWITCH, SLIDE (REC)
S406	1-554-277-00	SWITCH, SLIDE (REV TIME)
S407	1-552-334-00	SWITCH, BAND CHANGER (SPEED)
THP601	1-806-367-11	THERMISTOR (POSITIVE)
THP602	1-806-367-11	THERMISTOR (POSITIVE)
THP603	1-806-367-11	THERMISTOR (POSITIVE)
X401	1-567-772-11	VIBRATOR, CERAMIC (4MHz)

ACCESSORIES & PACKING MATERIALS
****

⚠	1-463-691-11	ADAPTOR, AC (AC-930F) (US,Canadian)
⚠	1-463-701-11	ADAPTOR, AC (AC-930A) (Australian)
⚠	1-465-568-21	ADAPTOR, AC (AC-930A) (UK)
⚠	1-473-998-11	ADAPTOR, AC (AC-930F) (AEP)
	1-771-219-16	CONTROL UNIT, FOOT (FS-80)
	3-750-533-16	MANUAL, INSTRUCTION (ENGLISH,FRENCH, GERMAN) (2000:EXCEPT US)
	3-750-533-24	MANUAL, INSTRUCTION (ENGLISH) (2000:US)
	3-754-128-14	MANUAL, INSTRUCTION (ENGLISH,FRENCH, GERMAN) (2020:EXCEPT US)
	3-754-128-24	MANUAL, INSTRUCTION (ENGLISH) (2020:US)
	8-916-911-30	CONTROL UNIT, FOOT (FS-25)
	8-952-447-90	HEADPHONE (MDR-006L)
	8-953-098-90	HEADPHONE (DE-45)
	A-3010-245-A	CONTROL UNIT, HAND (HU-25) (2020)

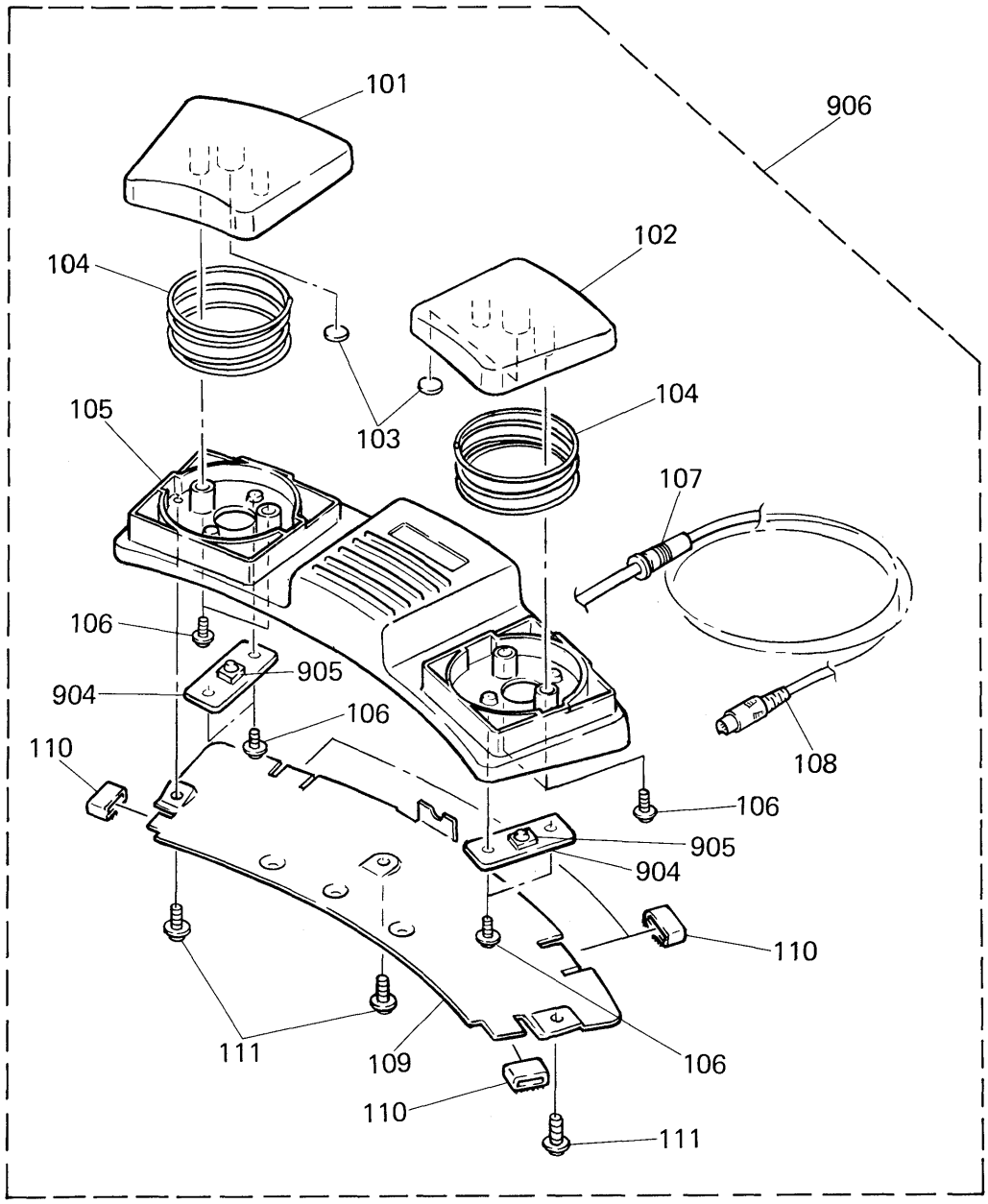
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 8
FOOT CONTROL UNIT (FS-25)

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts' Color

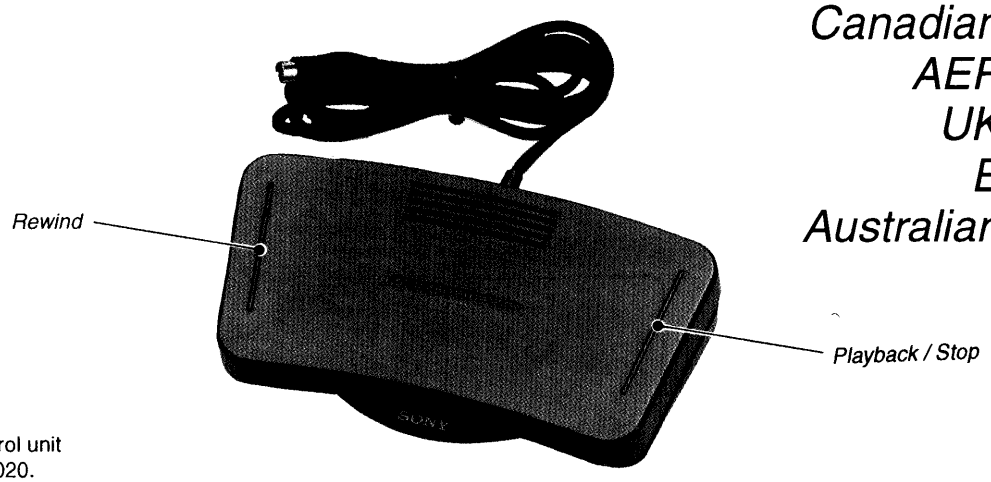


Ref.No	Part No.	Description	Remarks
101	2-263-525-01	PEDAL (LEFT)	
102	2-263-525-11	PEDAL (RIGHT)	
103	3-319-288-01	FOOT	
104	2-263-527-01	SPRING, COMPRESSION	
105	2-263-526-01	CASE	
106	4-880-333-01	SCREW, +PTPWH 2.6X5	
107	3-143-524-11	BUSHING, CABLE	
108	1-575-031-11	CORD (WITH CONNECTOR)	
109	2-263-524-01	PLATE, BOTTOM	
110	3-143-712-01	FOOT, RUBBER	
111	3-703-135-11	SCREW, +PTTWH 3X8	
904	*1-631-129-11	PC BOARD, SW	
905	1-571-315-11	SWITCH, KEY BOARD	
906	8-916-911-30	CONTROL UNIT, FOOT FS-25(U)	

FS-80

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model



This set is foot control unit
in M-2000 and M-2020.

SPECIFICATIONS

Dimensions	192 × 47 × 104 mm (w/h/d) (7 5/8 × 1 7/8 × 4 1/8 inches) without a cord
Weight	Approx. 500 g (1 lb 2 oz.) with a cord

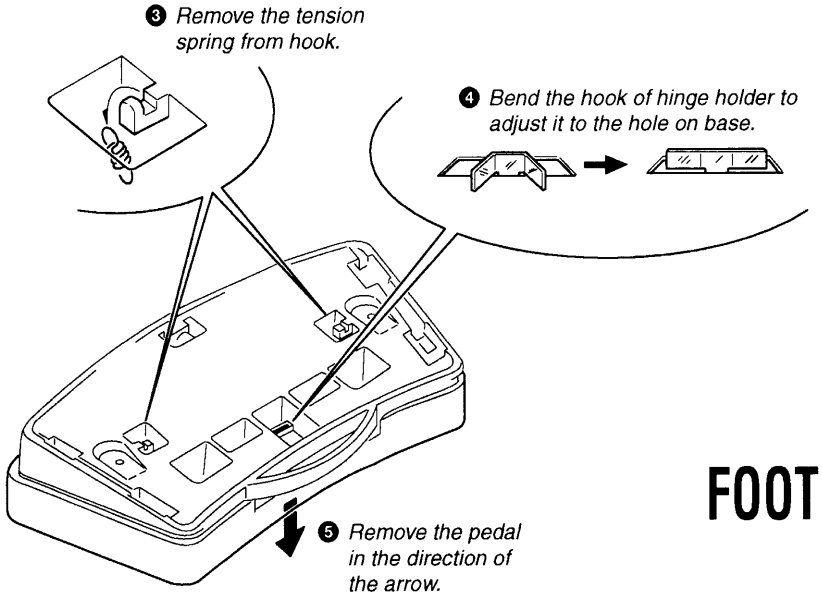
Design and specifications are subject to change without notice.

SECTION 1
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

1-1. PEDAL

❶ *Remove the two screws (+B 3 x 10) on bottom plate.*
❷ *Remove the bottom plate.*


❸ Remove the tension spring from hook.
❹ Bend the hook of hinge holder to adjust it to the hole on base.
* Be sure to make it to the original form on attaching.
❺ Remove the pedal in the direction of the arrow.

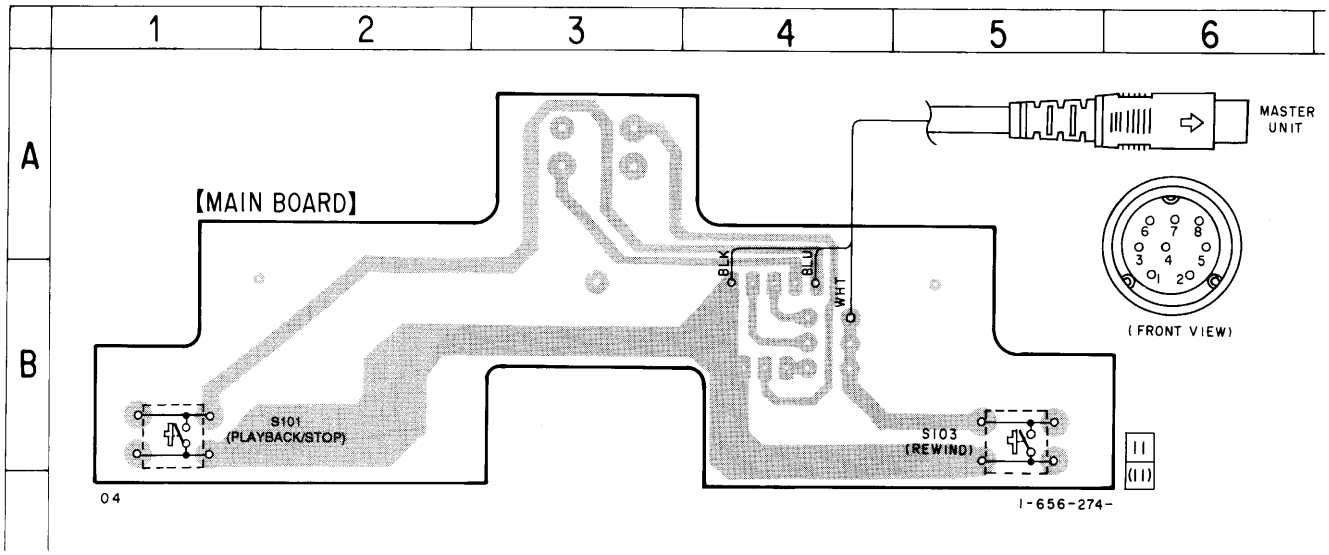
MICROFILM

FOOT CONTROL UNIT

SONY®

SECTION 2
DIAGRAMS

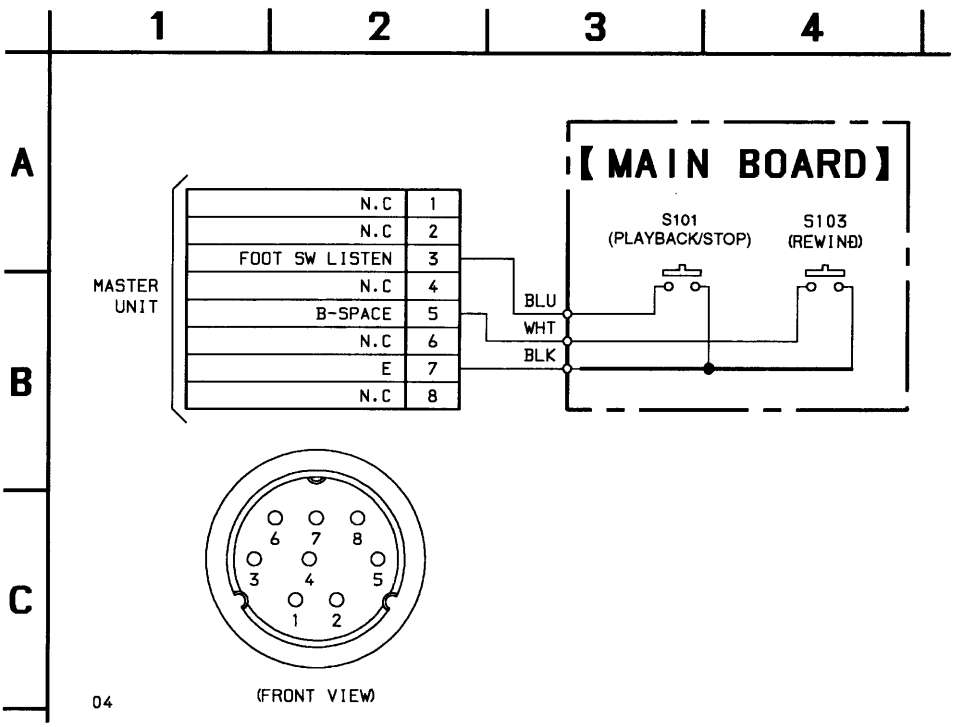
2-1. PRINTED WIRING BOARD



Note :

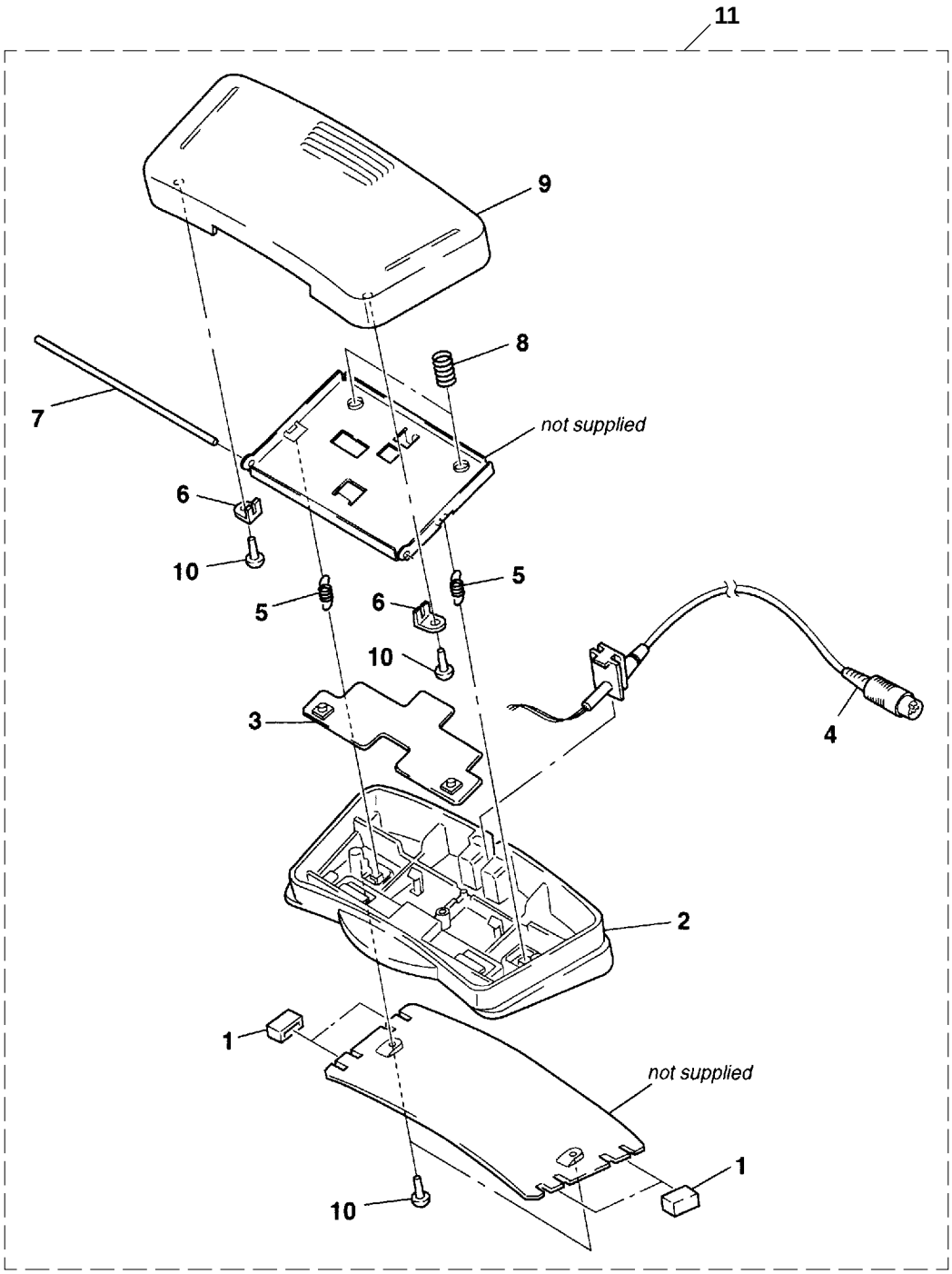
- ○— : parts extracted from the component side.
- ▒▒ : Pattern on the side which is seen.

2-2. SCHEMATIC DIAGRAM



SECTION 3
EXPLODED VIEW

NOTE:
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.



Ref. No.	Part No.	Description	Remark
1	3-143-712-01	FOOT, RUBBER	
2	3-923-103-01	BASE	
* 3	1-656-274-11	MAIN BOARD	
4	9-980-787-01	CORD (A) (WITH CONNECTOR)	
5	3-143-709-01	SPRING, TENSION	
* 6	3-923-107-01	HOLDER, HINGE	
* 7	9-933-123-01	SHAFT, CONNECTING	
8	9-933-124-01	SPRING, COMPRESSION	
9	3-923-104-11	PEDAL	
10	7-685-547-11	TAPPING +B 3X10, TYPE2 N-S	
11	1-771-219-16	CONTROL UNIT, FOOT (FS-80)	

MAIN

SECTION 4
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
*	1-656-274-11	MAIN BOARD	
		**********	
		< SWITCH >	
S101	1-692-985-11	SWITCH, KEY BOARD (PLAYBACK/STOP)	
S103	1-692-985-11	SWITCH, KEY BOARD (REWIND)	
**********			
		MISCELLANEOUS	
		**********	
4	9-980-787-01	CORD (A) (WITH CONNECTOR)	

Sony Corporation
Personal A&V Products Company

9-923-243-11

97G0494-1
Printed in Japan ©1997. 7
Published by Quality Engineering Dept. (Shibaura)

HU-25

SERVICE MANUAL

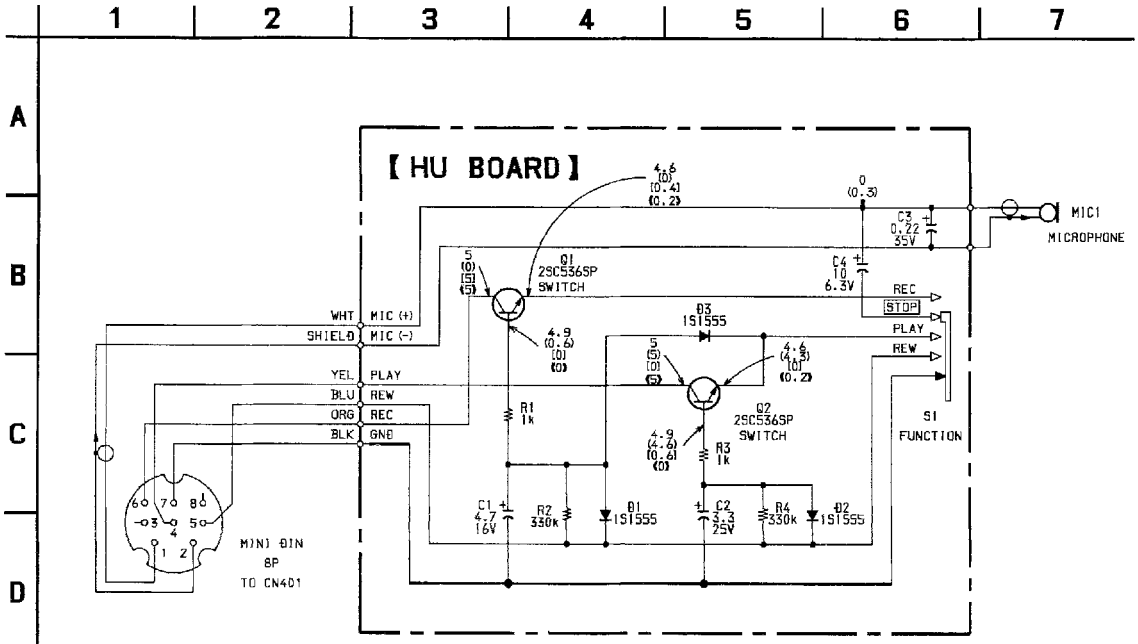
US Model
Canadian Model
AEP Model
UK Model
E Model

HAND CONTROL UNIT

SONY®

SECTION 1
GENERAL

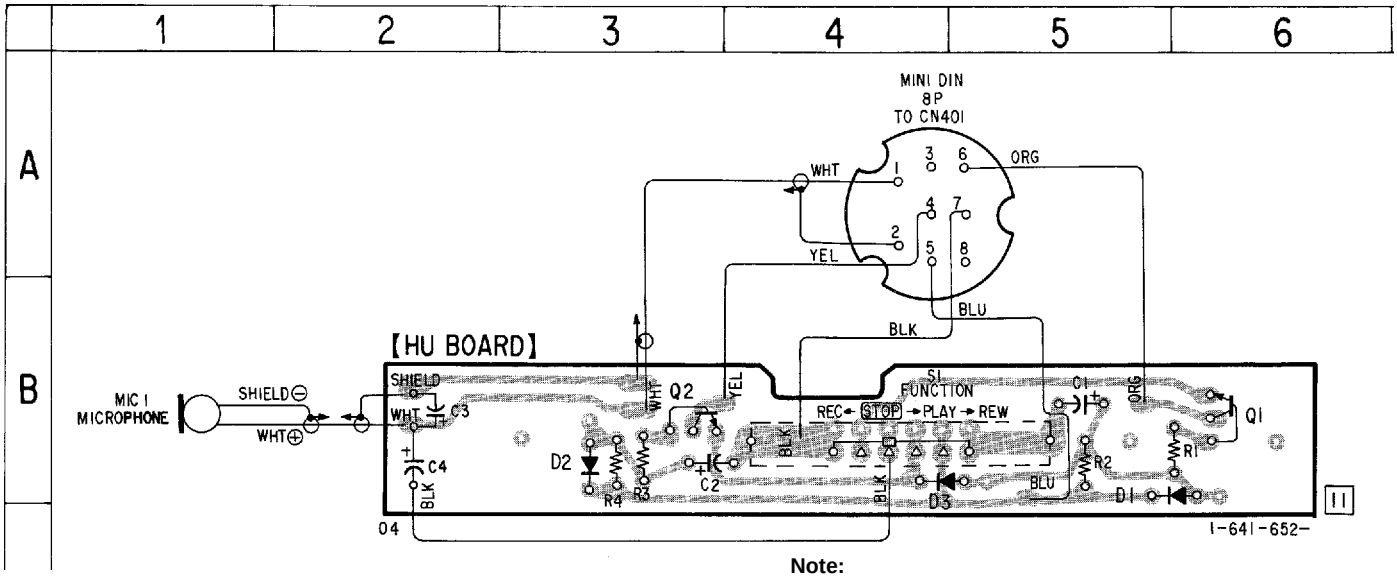
1-1. SCHEMATIC DIAGRAM — FORMER TYPE —



Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- Power voltage is dc 9 V and fed with regulated dc power supply from external power voltage jack of this set (M-2020).
- Voltage is dc with respect to ground under no-signal (detuned) conditions.
  no mark : STOP
  ( ) : REC
  [ ] : PLAY
  << >> : REW
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.

1-2. PRINTED WIRING BOARD — FORMER TYPE —

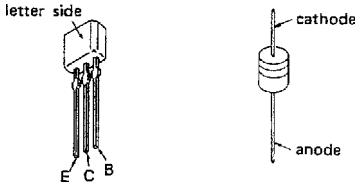


Note:

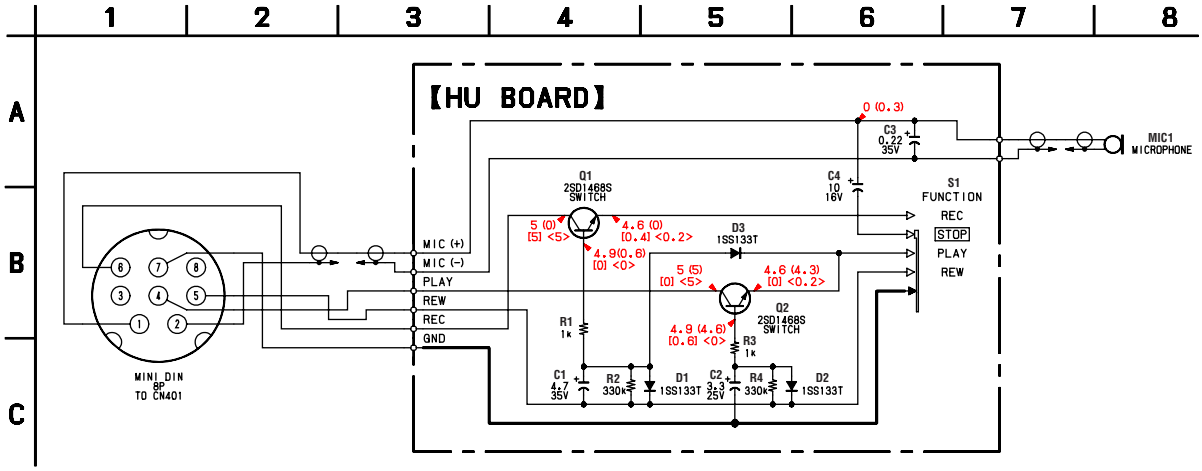
- o——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.

1-3. SEMICONDUCTOR LEAD LAYOUTS

2SC2785-HFE **1SS119**



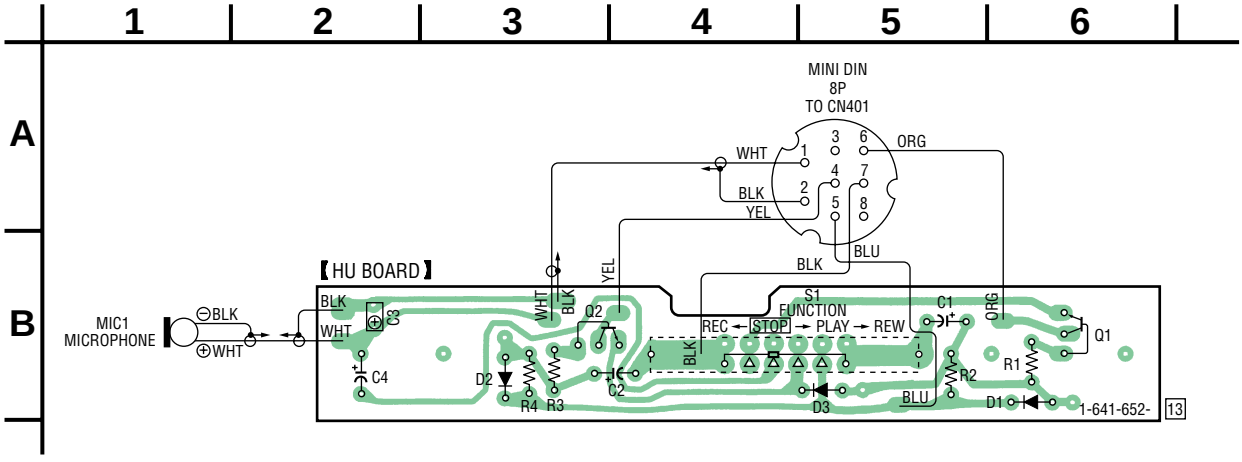
1-4. SCHEMATIC DIAGRAM — NEW TYPE —



Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- Power voltage is dc 9 V and fed with regulated dc power supply from external power voltage jack of this set (M-2020).
- Voltage is dc with respect to ground under no-signal (detuned) conditions.
  no mark : STOP
  ( ) : REC
  [ ] : PLAY
  < > : REW
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.

1-5. PRINTED WIRING BOARD — NEW TYPE —



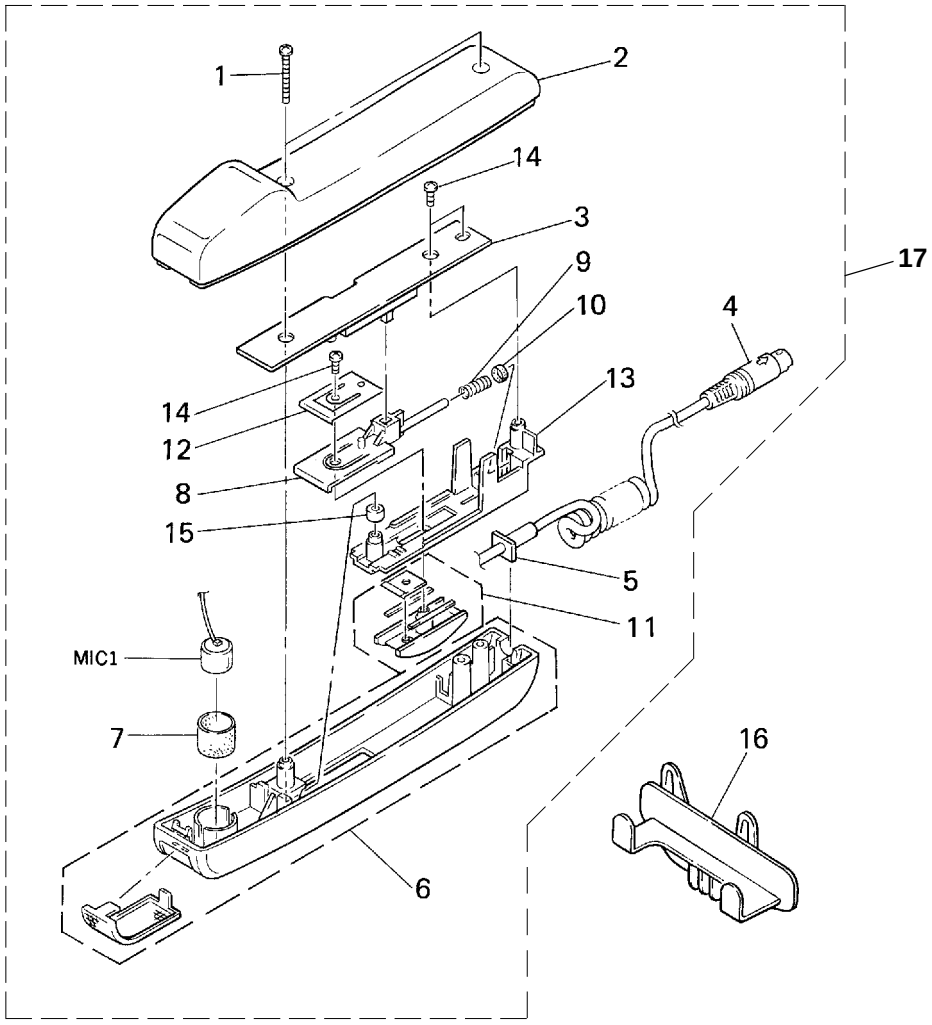
Note:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.

SECTION 2
EXPLODED VIEWS

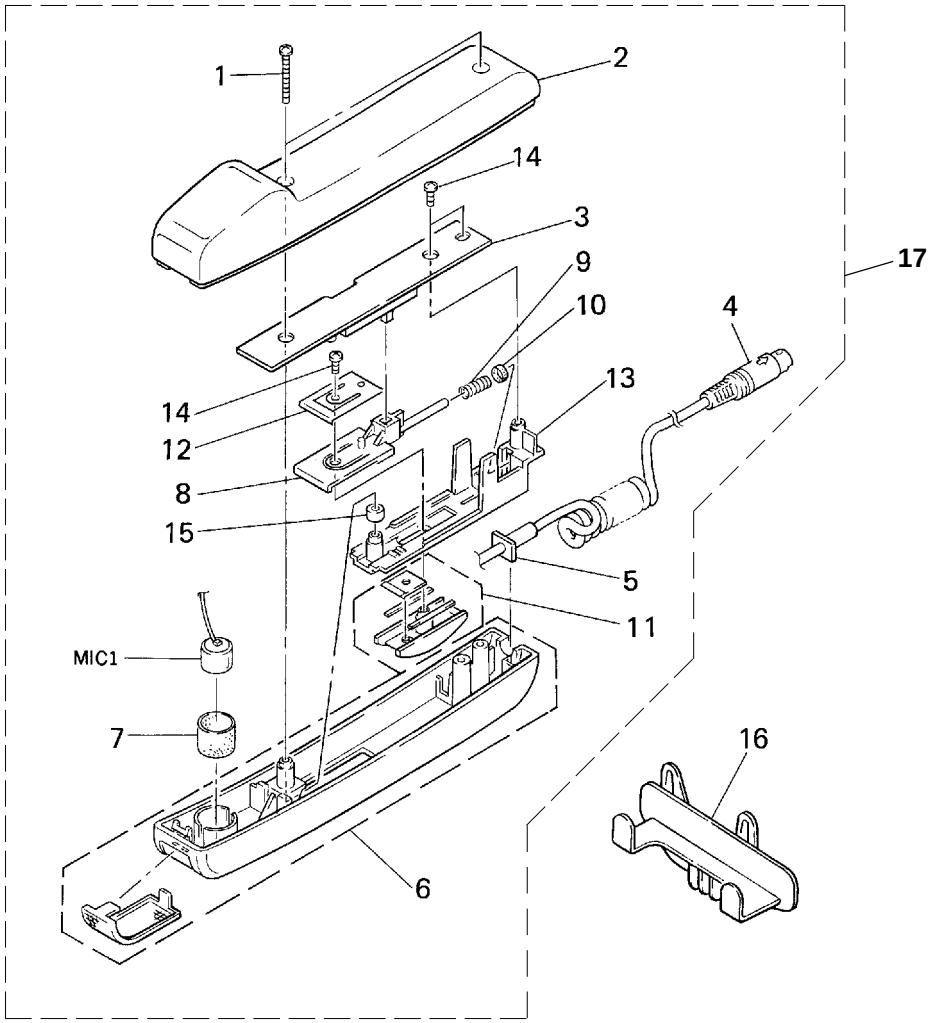
NOTE:
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

2-1. FORMER TYPE



Ref. No.	Part No.	Description	Remark
1	2-183-128-01	SCREW (2.6X20), +BTP	
2	3-373-049-01	CASE (LOWER)	
* 3	1-641-652-11	HU BOARD	
4	1-690-450-11	CORD (WITH CONNECTOR) 8P	
5	2-263-409-11	BUSHING, CORD	
6	A-3041-642-A	CASE (UPPER) ASSY	
* 7	2-184-312-01	HOLDER, MICROPHONE	
8	2-184-309-01	PLATE, SLIDE	
9	2-184-314-01	SPRING, COMPRESSION	
10	3-831-441-11	SHEET, VIBRATION PROOF	
11	X-2184-301-1	BUTTON ASSY, SLIDE	
* 12	2-184-308-01	SPRING, LEAF	
* 13	3-372-107-21	CHASSIS (MOLD)	
14	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
15	3-372-108-01	CAP	
16	A-3041-641-A	CRADLE ASSY	
17	A-3010-245-A	CONTROL UNIT, HAND (HU-25)	
MIC1	1-542-064-31	MICROPHONE, ELECTRET CONDENSER	

2-2. NEW TYPE



Ref. No.	Part No.	Description	Remark
1	2-183-128-11	+BTP (2.6X20)	
2	3-373-049-01	CASE (LOWER)	
* 3	1-641-652-13	HU BOARD	
4	1-690-450-12	CORD (WITH CONNECTOR) 8P	
5	2-263-409-11	BUSHING, CORD	
6	A-3041-642-A	CASE (UPPER) ASSY	
* 7	3-904-573-01	HOLDER, MICROPHONE	
8	2-184-309-01	PLATE, SLIDE	
9	2-184-314-01	SPRING, COMPRESSION	
10	3-831-441-11	SHEET, VIBRATION PROOF	
11	X-2184-301-3	BUTTON ASSY, SLIDE	
* 12	2-184-308-01	SPRING, LEAF	
* 13	3-372-107-21	CHASSIS (MOLD)	
14	3-259-278-01	SCREW (+B) (2.6X6)	
15	3-372-108-01	CAP	
16	A-3041-641-A	CRADLE ASSY	
17	A-3010-245-A	CONTROL UNIT, HAND (HU-25)	
MIC1	1-542-214-11	MICROPHONE, ELECTRET CONDENSER	

HU

SECTION 3
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS
  uF : µF
- RESISTORS
  All resistors are in ohms

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	1-641-652-11	HU BOARD (FORMER TYPE)			
		*********			
		< CAPACITOR >			
C1	1-126-288-11	ELECT	4.7uF	20%	16V
C2	1-126-162-11	ELECT	3.3uF	20%	50V
C3	1-131-404-00	TANTAL. CHIP	0.22uF		35V
C4	1-126-157-11	ELECT	10uF	20%	16V
		< DIODE >			
D1	8-719-911-19	DIODE 1SS119-25			
D2	8-719-911-19	DIODE 1SS119-25			
D3	8-719-911-19	DIODE 1SS119-25			
		< TRANSISTOR >			
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE			
		< RESISTOR >			
R1	1-249-417-11	CARBON	1K	5%	1/4W
R2	1-247-891-00	CARBON	330K	5%	1/4W
R3	1-249-417-11	CARBON	1K	5%	1/4W
R4	1-247-891-00	CARBON	330K	5%	1/4W
		< SWITCH >			
S1	1-572-262-11	SWITCH, SLIDE (FUNCTION)			

****

Ref. No.	Part No.	Description			Remark
*	1-641-652-13	HU BOARD (NEW TYPE)			
		*********			
		< CAPACITOR >			
C1	1-126-572-11	ELECT	4.7uF	20%	35V
C2	1-126-162-11	ELECT	3.3uF	20%	50V
C3	1-135-072-21	TANTAL. CHIP	0.22uF	10%	35V
C4	1-124-233-11	ELECT	10uF	20%	16V
		< DIODE >			
D1	8-719-991-33	DIODE 1SS133T-77			
D2	8-719-991-33	DIODE 1SS133T-77			
D3	8-719-991-33	DIODE 1SS133T-77			
		< TRANSISTOR >			
Q1	8-729-907-34	TRANSISTOR 2SD1468S-TP-R			
Q2	8-729-907-34	TRANSISTOR 2SD1468S-TP-R			
		< RESISTOR >			
R1	1-249-417-11	CARBON	1K	5%	1/4W
R2	1-247-891-00	CARBON	330K	5%	1/4W
R3	1-249-417-11	CARBON	1K	5%	1/4W
R4	1-247-891-00	CARBON	330K	5%	1/4W
		< SWITCH >			
S1	1-572-262-11	SWITCH, SLIDE (FUNCTION)			

M-2000
FS-25

SONY®
SERVICE MANUAL

US Model
AEP Model
UK Model
Canadian Model
Australian Model

SUPPLEMENT-1

File this supplement with the Service Manual.

Subject: Main and power boards change

• Changed parts of main board (The mounting parts of power board are not changed.)

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

1-631-077-14 (NEW TYPE)				1-631-077-11 (FORMAR TYPE)			
Ref. No.	Part No.	Description		Ref. No.	Part No.	Description	
		CAPACITOR				CAPACITOR	
C102	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	C102	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C111	1-164-182-11	CERAMIC CHIP 0.0033MF	10% 50V	C111	1-163-015-00	CERAMIC CHIP 0.0033MF	10% 50V
C114	1-126-603-11	ELECT CHIP 4.7MF	20% 35V	C114	1-126-198-11	ELECT CHIP 4.7MF	20% 35V
C120	1-126-209-11	ELECT CHIP 100MF	20% 4V	C120	1-126-208-11	ELECT CHIP 47MF	20% 4V
C133		———		C133	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V
C306	1-164-182-11	CERAMIC CHIP 0.0033MF	10% 50V	C306	1-163-015-00	CERAMIC CHIP 0.0033MF	10% 50V
C307	1-164-182-11	CERAMIC CHIP 0.0033MF	10% 50V	C307	1-163-015-00	CERAMIC CHIP 0.0033MF	10% 50V
C402	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	C402	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C403	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	C403	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C404	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	C404	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C405	1-164-232-11	CERAMIC CHIP 0.01MF	10% 50V	C405	1-163-021-00	CERAMIC CHIP 0.01MF	10% 50V
C408	1-163-009-11	CERAMIC CHIP 0.001MF	10% 50V	C408	1-102-074-00	CERAMIC 0.001MF	10% 50V
C602	1-126-601-11	ELECT CHIP 2.2MF	20% 50V	C602	1-126-195-11	ELECT CHIP 2.2MF	20% 50V
C603	1-126-607-11	ELECT CHIP 47MF	20% 4V	C603	1-126-208-11	ELECT CHIP 47MF	20% 4V
C605	1-126-603-11	ELECT CHIP 4.7MF	20% 35V	C605	1-126-198-11	ELECT CHIP 4.7MF	20% 35V
		CONNECTOR				CONNECTOR	
CN101	1-506-467-11	PIN, CONNECTOR 2P		CN101	★1-506-467-11	PIN, CONNECTOR 2P	
CN102	1-506-469-11	PIN, CONNECTOR 4P		CN102	★1-506-469-11	PIN, CONNECTOR 4P	
CN103	1-506-467-11	PIN, CONNECTOR 2P		CN103	★1-506-467-11	PIN, CONNECTOR 2P	
CN402	1-506-467-11	PIN, CONNECTOR 2P		CN402	★1-506-467-11	PIN, CONNECTOR 2P	
CN403	1-506-467-11	PIN, CONNECTOR 2P		CN403	★1-506-467-11	PIN, CONNECTOR 2P	
CN502	1-506-468-11	PIN, CONNECTOR 3P		CN502	★1-506-468-11	PIN, CONNECTOR 3P	
CN601	1-506-470-11	PIN, CONNECTOR 5P		CN601	★1-506-470-11	PIN, CONNECTOR 5P	
CN602	1-506-467-11	PIN, CONNECTOR 2P		CN602	★1-506-467-11	PIN, CONNECTOR 2P	
		DIODE				DIODE	
D401	8-719-104-34	DIODE 1S2836		D401	8-719-100-03	DIODE 1S2835	
D402	8-719-104-34	DIODE 1S2836		D402	8-719-100-03	DIODE 1S2835	
D404	8-719-104-34	DIODE 1S2836		D404	8-719-100-03	DIODE 1S2835	
D405	8-719-104-34	DIODE 1S2836		D405	8-719-100-03	DIODE 1S2835	
D601		———		D601	8-719-100-03	DIODE 1S2835	
D602		———		D602	8-719-100-03	DIODE 1S2835	
		IC				IC	
IC102	8-759-008-67	IC MC14066BF		IC102	8-759-106-23	IC UPD4066BG	
IC601	8-759-008-67	IC MC14066BF		IC601	8-759-106-23	IC UPD4066BG	
		TRANSISTOR				TRANSISTOR	
Q401	8-729-903-87	TRANSISTOR 2SB1188-Q		Q401	8-729-807-33	TRANSISTOR 2SB1123	
Q404	8-729-903-87	TRANSISTOR 2SB1188-Q		Q404	8-729-807-33	TRANSISTOR 2SB1123	
Q407	8-729-903-87	TRANSISTOR 2SB1188-Q		Q407	8-729-807-33	TRANSISTOR 2SB1123	
Q601	8-729-903-87	TRANSISTOR 2SB1188-Q		Q601	8-729-807-33	TRANSISTOR 2SB1123	
Q603	8-729-903-87	TRANSISTOR 2SB1188-Q		Q603	8-729-807-33	TRANSISTOR 2SB1123	
Q604	8-729-903-87	TRANSISTOR 2SB1188-Q		Q604	8-729-807-33	TRANSISTOR 2SB1123	
Q609	8-729-903-87	TRANSISTOR 2SB1188-Q		Q609	8-729-807-33	TRANSISTOR 2SB1123	
		RESISTOR				RESISTOR	
R301	1-216-045-00	METAL GLAZE 680	5% 1/10 W	R301	1-216-041-00	METAL GLAZE 470	5% 1/10 W
R419	1-216-049-00	METAL GLAZE 1K	5% 1/10 W	R419	1-249-417-11	CARBON 1K	5% 1/4 W
		SWITCH				SWITCH	
S401	1-572-198-11	SWITCH, KEY BOARD (▶▶ FF)		S401	1-571-528-11	SWITCH, KEY BOARD (▶▶ FF)	
S402	1-572-198-11	SWITCH, KEY BOARD (▶ PLAY)		S402	1-571-528-11	SWITCH, KEY BOARD (▶ PLAY)	
S403	1-572-198-11	SWITCH, KEY BOARD (■ STOP)		S403	1-571-528-11	SWITCH, KEY BOARD (■ STOP)	
S404	1-572-198-11	SWITCH, KEY BOARD (◀◀ REW)		S404	1-571-528-11	SWITCH, KEY BOARD (◀◀ REW)	

SEMICONDUCTOR LEAD LAYOUTS

RC7805FA

μPD75402GB-514-3B4

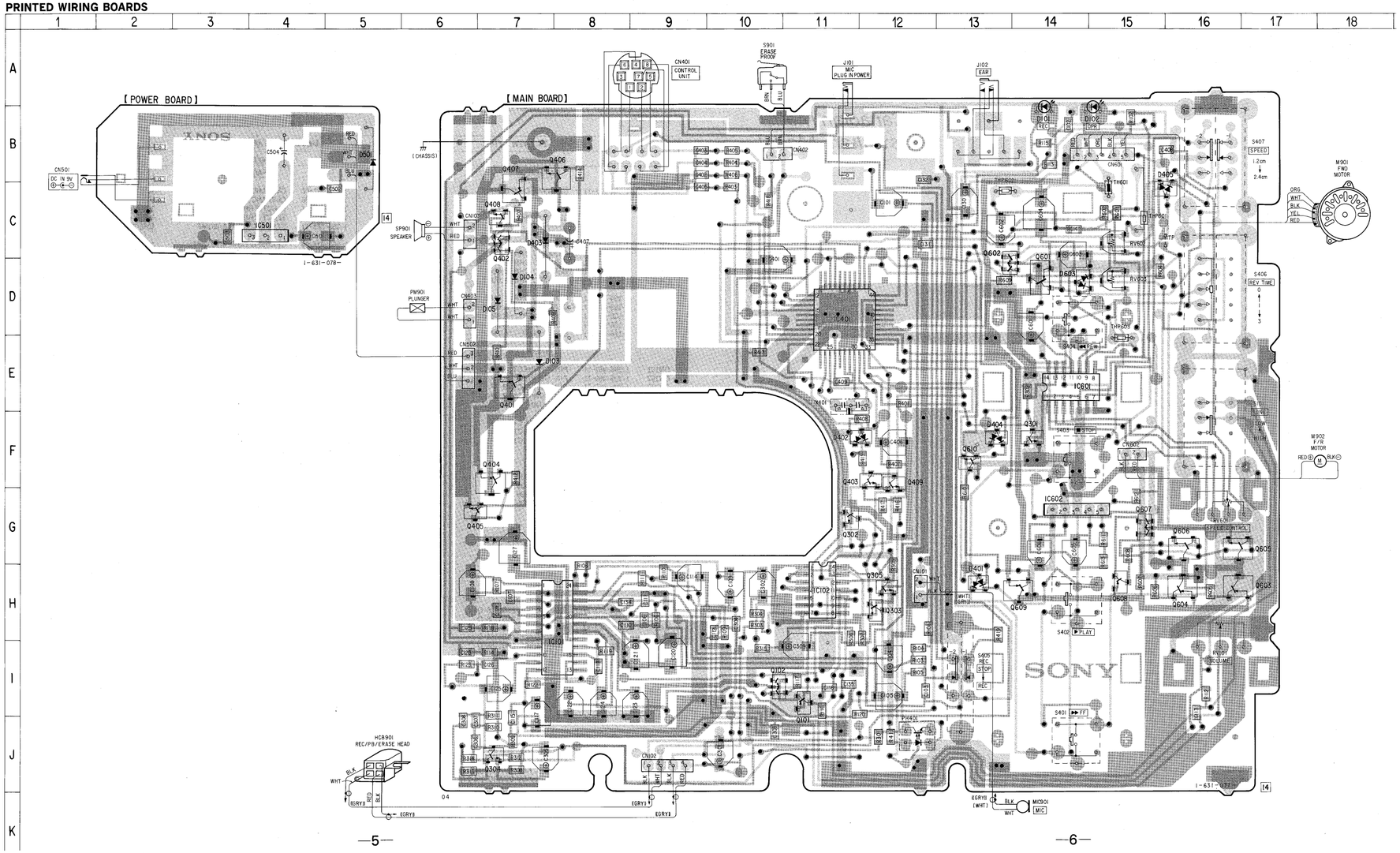
10E2

● Semiconductor Location

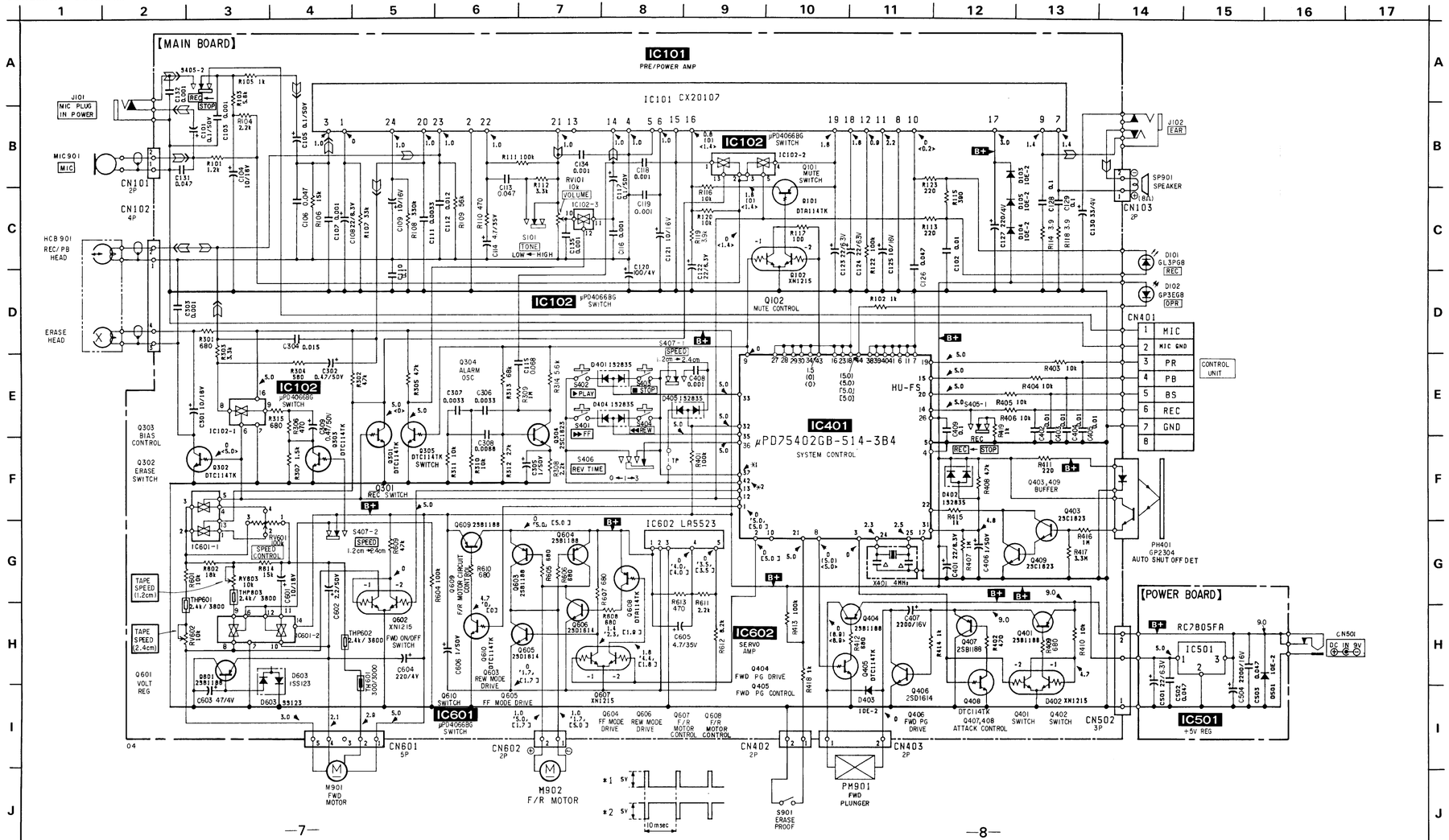
Ref. No.	Location	Ref. No.	Location
D101	B-14	Q401	E-7
D102	B-15	Q402	C-7
D103	E-7	Q403	F-12
D104	D-7	Q404	F-7
D105	D-7	Q405	G-6
D401	H-13	Q406	B-8
D402	F-11	Q407	B-7
D403	C-7	Q408	C-7
D404	F-13	Q409	F-12
D405	C-15	Q601	D-14
D501	B-5	Q602	C-13
D603	D-14	Q603	H-17
		Q604	H-16
IC101	H-8	Q605	G-17
IC102	H-11	Q606	G-16
IC401	D-11	Q607	G-15
IC501	C-4	Q608	H-15
IC601	E-14	Q609	H-14
IC602	G-14	Q610	F-13
PH401	J-12		
Q101	I-11		
Q102	I-10		
Q301	F-14		
Q302	G-11		
Q303	H-12		
Q304	J-7		
Q305	H-12		

- ○——: parts extracted from the component side.
- ■: parts mounted on the conductor side.
- ●: Through hole.
- ▨: Pattern on the side which is seen.
- ▨: Pattern of the rear side.

PRINTED WIRING BOARDS

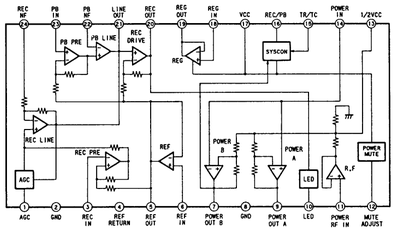


SCHEMATIC DIAGRAM

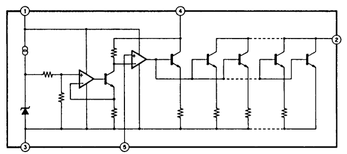


● IC Block Diagrams

IC101 CX20107



IC602 LA5523



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- Power voltage is dc 9 V and fed with regulated dc power supply from external power voltage jack.
- Voltage are dc with respect to ground under no-signal conditions.
  no mark : PLAY
  < > : REC
  ⌜ ⌟ : FF
  [ ] : REW
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : PB
  ⇨⇨ : REC

9-953-888-81

Sony Corporation
General Audio Group

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91H0432-1
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Published by Customer Relations and Service Group

M-2000
FS-25

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SUPPLEMENT-2

File this supplement with the Service Manual.

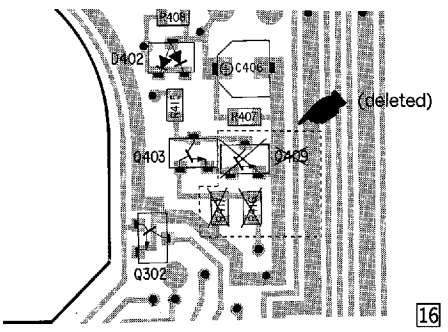
Subject : Change notice for Circuit

(ECN-BM500042)

☛ : **changed portion**

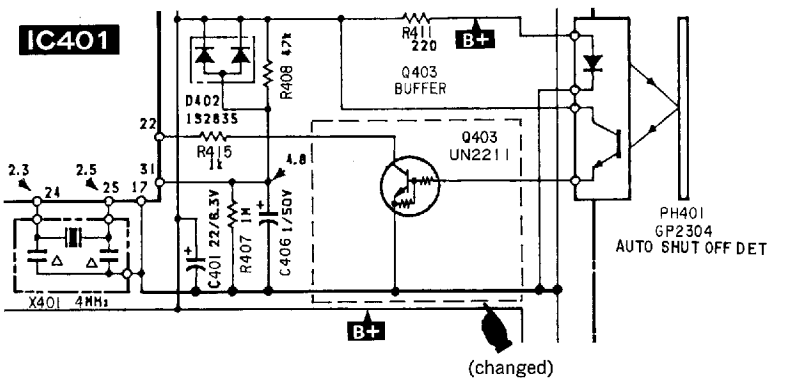
PRINTED WIRING BOARDS

SUPPLEMENT-1
Page 6
(Location : G-12)



SCHEMATIC DIAGRAM

SUPPLEMENT-1
Page 8
(Location : G-13)



CHANGED PARTS

Ref. No.	Former Parts Description	New Parts Part No.	New Parts Description	Remarks
Q403	TRANSISTOR 2SC1623-L6	8-729-421-22	TRANSISTOR UN2211	changed
Q409	TRANSISTOR 2SC1623-L6	———	———	deleted
R416	METAL GLAZE 1M 5% 1/10W	———	———	deleted
R417	METAL GLAZE 3.3M 5% 1/10W	———	———	deleted

9-953-888-82

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Consumer A & V Products Company
Personal A & V Products Div.

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Quality Engineering Dept.

M-2000
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UK Model
Australian Model

SUPPLEMENT-3

File this supplement with the service manual.

Subject: Change of Circuit

(ECN-BM500095)

The circuit has been changed to serial No. 101,163 and later.
Mechanical adjustment, electrical adjustment, printed wiring boards, schematic diagram, exploded view and electrical parts list of new type are described in this supplement-3.

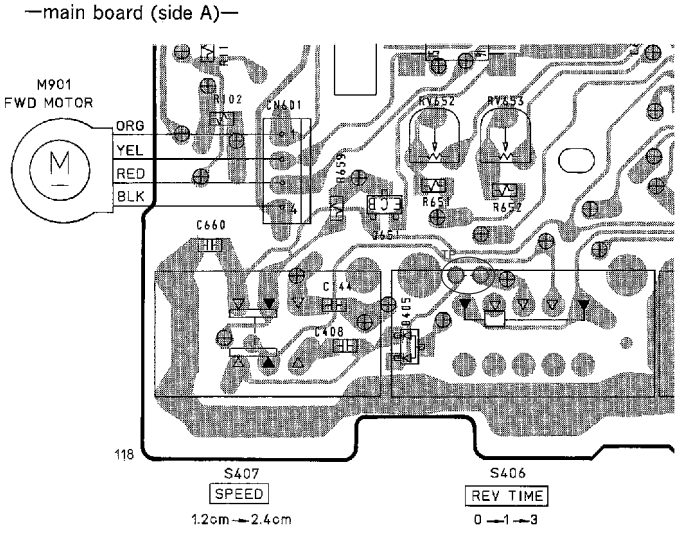
1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback/erase head — pinch roller
   rubber belts — capstan
   idlers
2. Demagnetize the record/playback/erase haed with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Power Supply Voltage: 9V dc

Note: When performing mechanism deck rotation check opening the main board, solder the TP portion. After the check, unsolder TP portion.



Torque Measurement

Torque	Meter Reading	Torque Meter
Forward	5—13g•cm (0.07—0.18oz•inch)	CQ-103M
Fast Forward and Rewind	40—95g•cm (0.56—1.32oz•inch)	CQ-201M

Tape Tension Measurement

Meter	Meter Reading
CQ-403M	More than 45g (1.58oz)

2. ELECTRICAL ADJUSTMENTS

PRECAUTION

1. The adjustments should be performed in the order given in this service manual.
2. Switches and controls should be set as follows unless otherwise specified.
   - VOLUME (RV101) control: max
   - SPEED CONTROL (RV651): mechanical mid
   - TONE (S101) switch: HIGH
   - REC (S405) switch: STOP

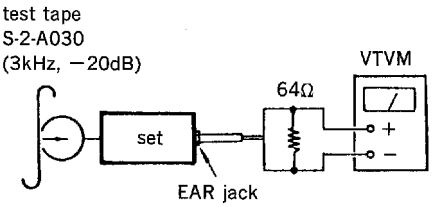
Test Tape

Type	Signal	Used for
S-2-A030	3kHz, −20dB	head azimuth adjustment
WS-24	3kHz, −10dB	tape speed adjustment

Record/playback/erase Head Azimuth Adjustment

Procedure:

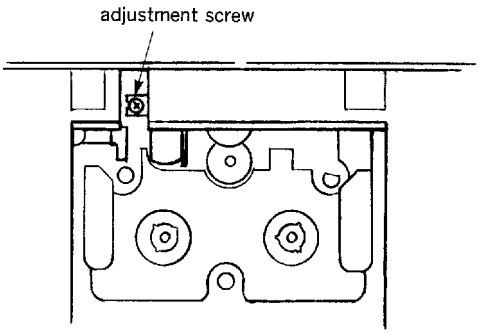
Mode: playback



Turn the adjustment screw to obtain the maximum reading on VTVM.

Note: Finish the screw adjustment with a turn in the clockwise direction.
After the adjustment, apply suitable locking compound to the adjustment screw.

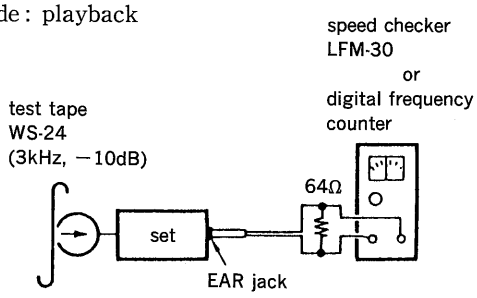
Adjustment Location:



Tape Speed Adjustment

Procedure :

Mode : playback



- Perform 2.4cm/s normal speed adjustment before 1.2cm/s normal speed adjustment.

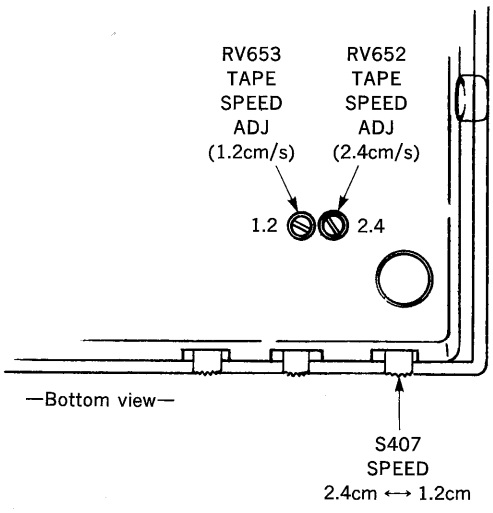
Normal speed	SPEED (S407)	Adjustment point	Frequency counter
2.4cm/s	2.4cm	RV652	2,985—3,015Hz
1.2cm/s	1.2cm	RV653	1,492—1,508Hz

Confirm that the reading on digital frequency counter is specification value as shown below.

SPEED CONTROL (RV651)	SPEED (S407)	Frequency counter
max	2.4cm	more than 4,500Hz
	1.2cm	more than 2,150Hz
min	2.4cm	less than 2,500Hz
	1.2cm	less than 1,250Hz

Frequency difference between the beginning and the end of the tape should be within ±1% (2.4cm/s normal speed : 30Hz, 1.2cm/s normal speed : 15Hz).

Adjustment Location :



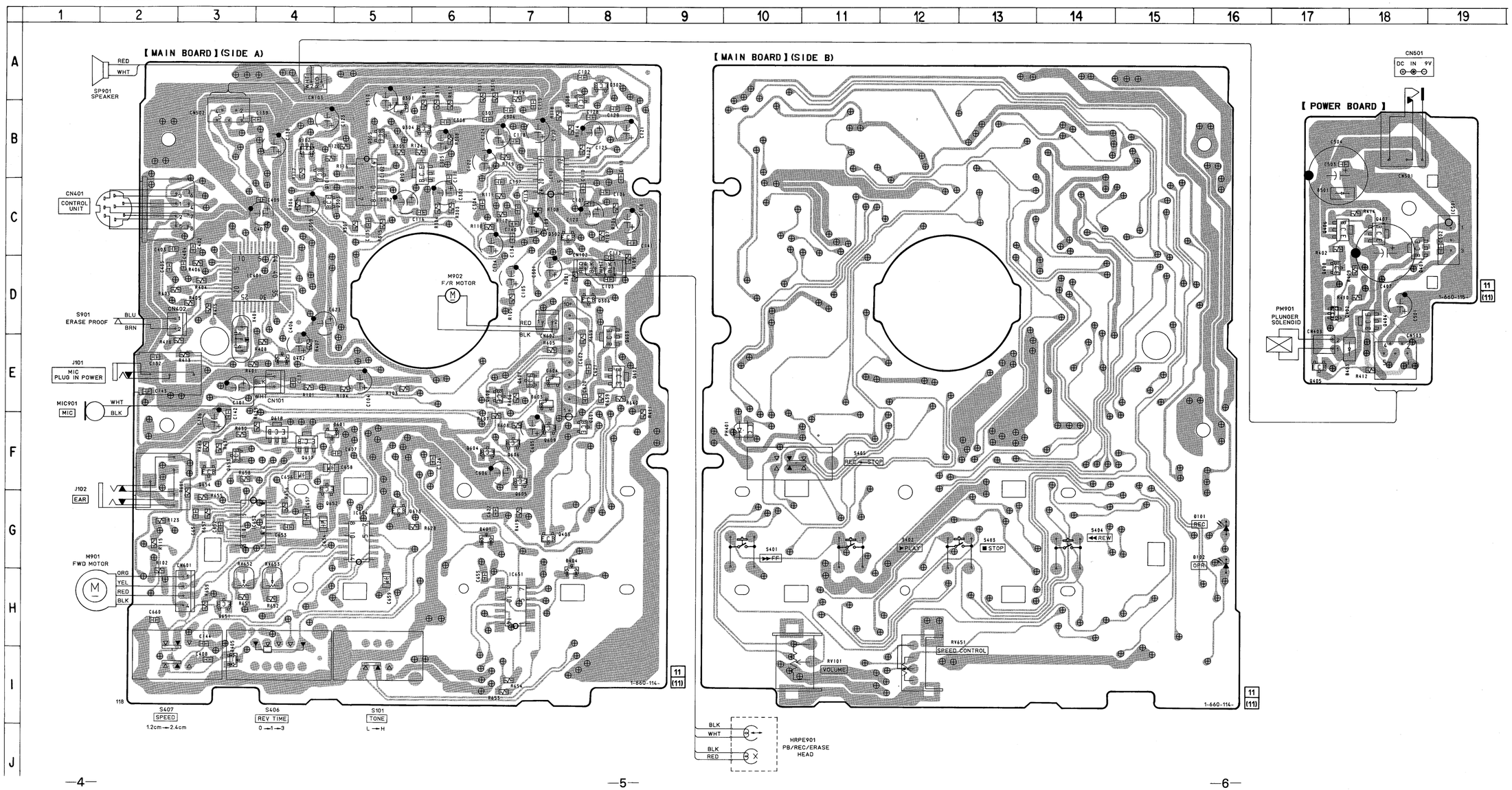
3. PRINTED WIRING BOARDS

• Semiconductor Location

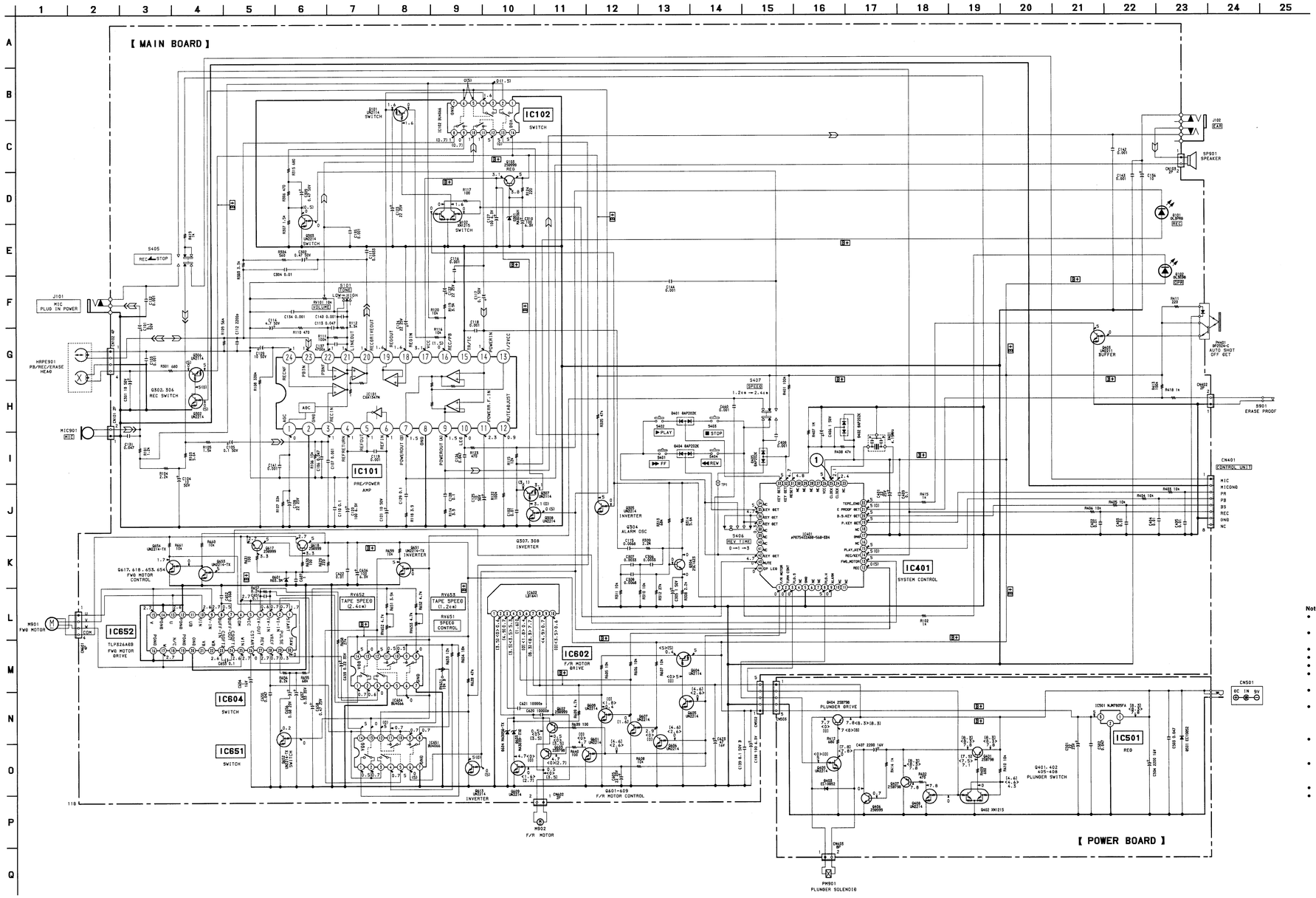
Ref. No.	Location	Ref. No.	Location
D101	G-16	Q304	B-6
D102	G-16	Q305	B-5
D301	B-5	Q306	D-8
D401	G-6	Q307	A-8
D402	E-4	Q308	A-8
D403	E-17	Q401	C-18
D404	G-8	Q402	D-17
D405	I-3	Q403	G-7
D501	C-17	Q404	D-18
D601	F-4	Q405	E-17
D603	E-7	Q406	C-17
D604	E-7	Q407	C-18
		Q408	D-17
IC101	B-7	Q601	F-8
IC102	B-5	Q602	E-8
IC401	D-3	Q603	E-8
IC501	C-19	Q604	F-6
IC602	E-8	Q605	F-7
IC604	G-5	Q606	F-7
IC651	H-7	Q607	E-7
IC652	G-3	Q608	E-7
		Q609	F-7
PH401	F-10	Q613	G-5
		Q617	F-4
Q101	B-4	Q618	F-4
Q102	B-4	Q651	H-3
Q103	B-6	Q652	F-4
Q302	C-7	Q653	F-3
Q303	C-4	Q654	F-3

Note :

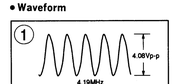
- ⊕ : Through hole.
- ▨ : Pattern on the side which is seen.
- ▨ : Pattern on the rear side.



4. SCHEMATIC DIAGRAM • Refer to page 11 for IC Block Diagrams.



• Waveform

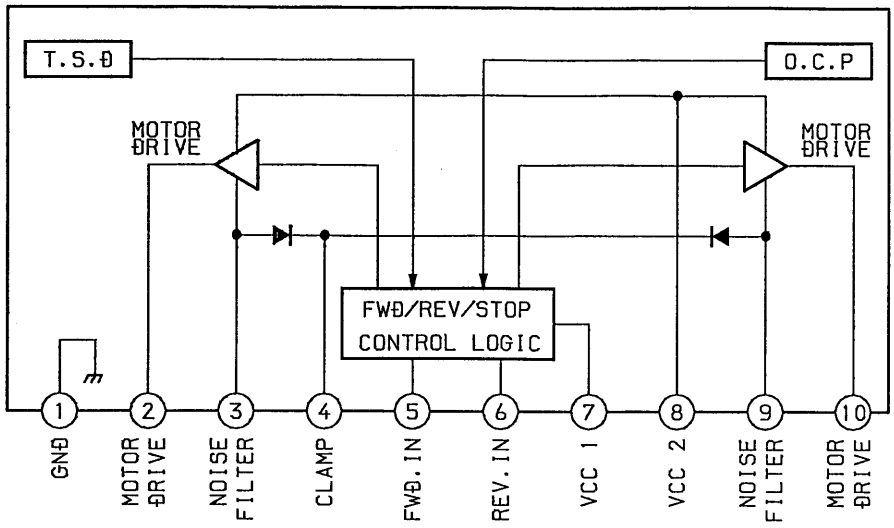


Note :

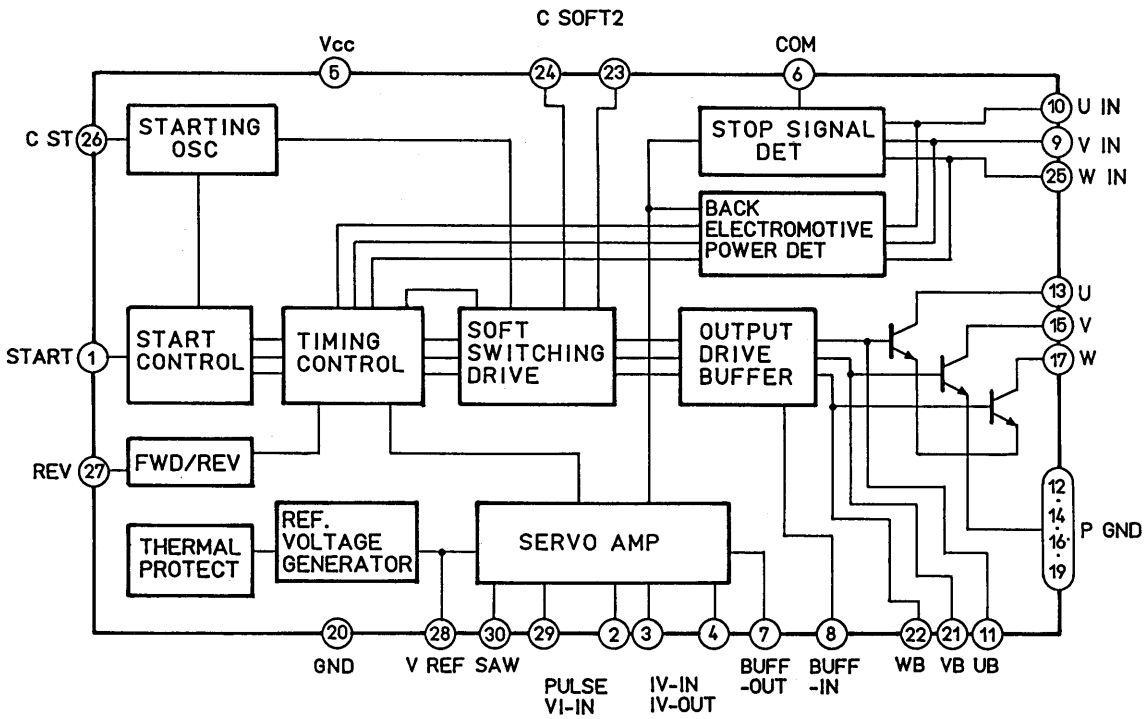
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantaliums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- B+ Line
- ▭ : adjustment for repair.
- Power voltage is dc 9V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- no mark: PLAY
  ( ): REC
  < >: FF
  [ ]: REW
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⟩⟩ : PB
  ⟩⟩ : REC

• **IC Block Diagrams**

IC602 LB1641



IC652 TLP326ADB



5. EXPLANATION OF IC401 (μPD75402AGB-568-3B4)

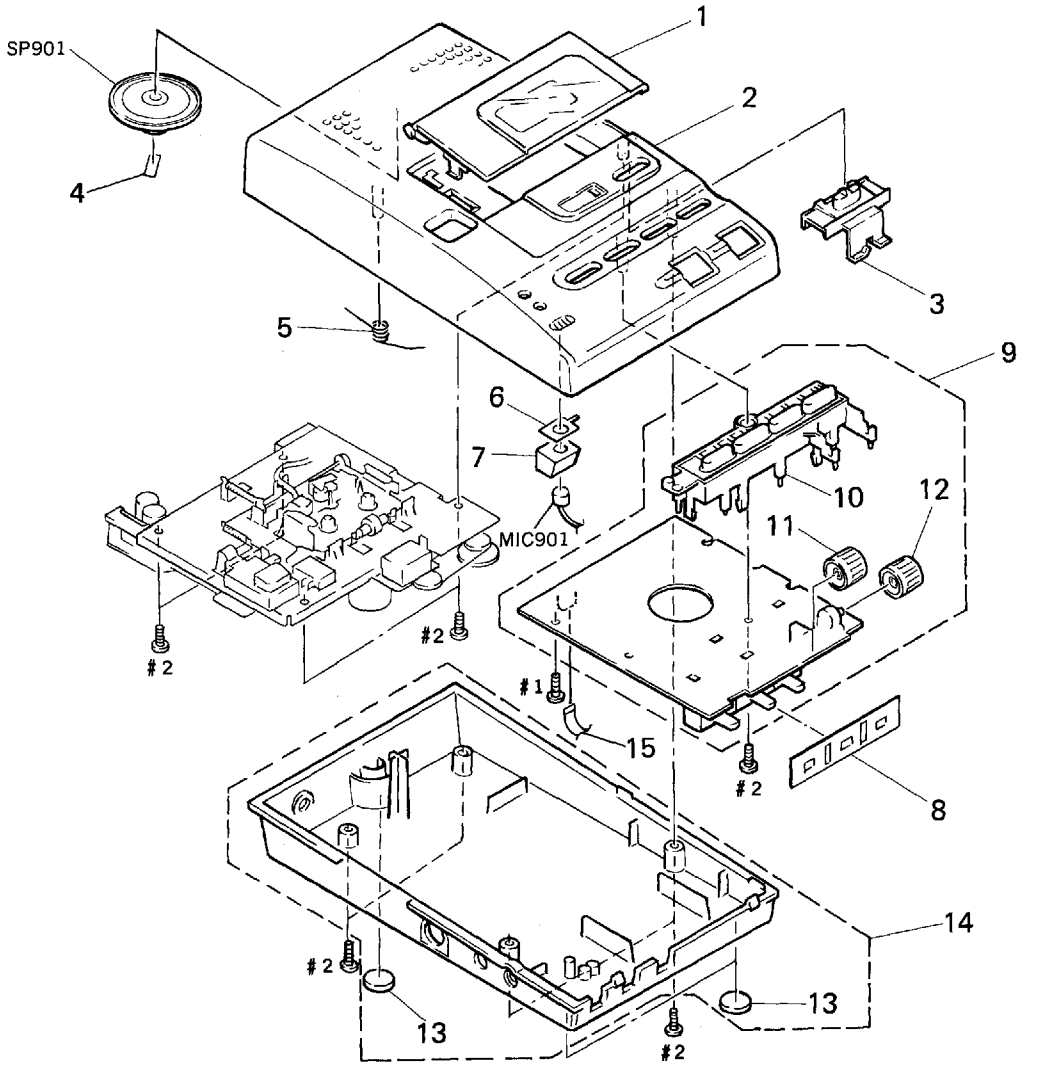
Pin No.	Pin Name	I/O	Pin Description
1	F/R MOTOR	O	FF/REW motor ON/OFF signal
2	TURN CONT	O	FF/REW motor normal turn/reverse turn control signal
3	PLG. S	O	Plunger suction signal
4	NC	—	
5	GND	—	GND
6	NC	—	
7	NC	—	
8	PLG. H	O	Plunger holding signal
9	ALARM	O	Alarm signal
10	NC	—	
11	NC	—	
12	REC	O	REC signal
13	FWD MOTOR	O	FWD motor ON/OFF signal
14	REC KEY	I/O	REC key detection
15	PLAY KEY	I	PLAY key
16	NC	—	
17	GND	—	GND
18	NC	—	
19	P. KEY DET	I/O	Partial reverse key detection
20	B. S KEY DET	I/O	Back space key detection
21	E PROOF DET	I/O	Erase proof detection
22	TAPE END	I	Reel turn detecting photosensor signal
23	NC	—	
24	CLOCK	I	Clock
25	CLOCK	I	Clock
26	VCC	—	Power supply
27	NC	—	
28	NC	—	
29	NC	—	
30	NC	—	
31	$\overline{\text{RESET}}$	I	Reset signal
32	KEY DET	I	Matrix system, key detection PLAY STOP FF REW, TAPE SPEED 1.2/2.4 REV TIME 0/1/3 TP (Pattern bridge stops END detection, and it Permits repair and operational check while floating the board.)
33	KEY DET		
35	KEY DET		
36	KEY DET		
37	KEY DET	O	
42	KEY DET		
34	NC	—	
38	NC	—	
39	NC	—	
40	NC	—	
41	NC	—	
43	MUTE	O	Mute signal
44	OP LED	O	Operation LED lighting

6. EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)... (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

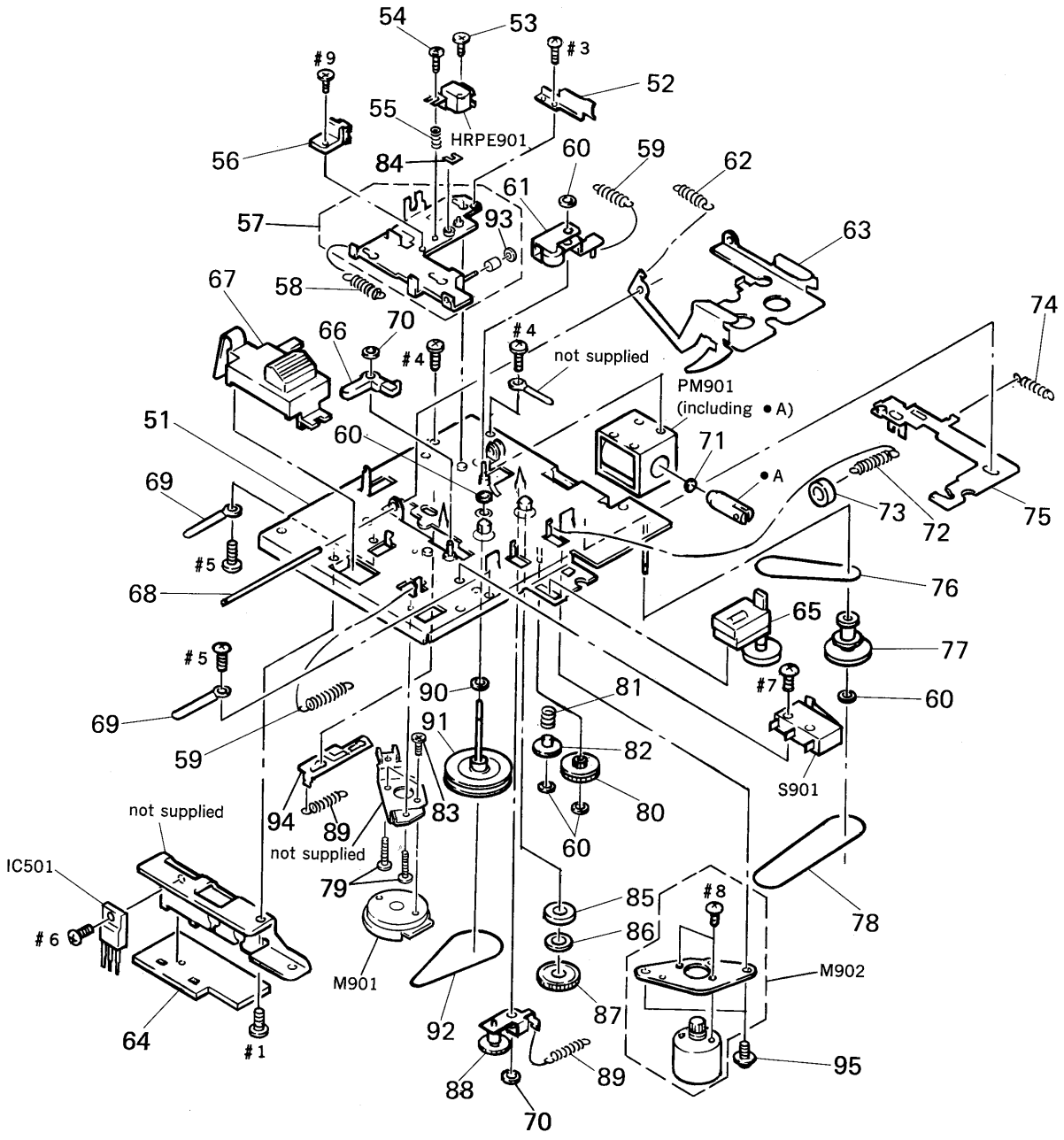
6-1. CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	X-3353-902-1	LID ASSY, CASSETTE	
2	X-3353-901-1	CABINET (UPPER) ASSY (2000)	
2	X-3363-743-1	CABINET (UPPER) ASSY (2020)	
3	3-353-902-01	KNOB (REC)	
4	4-017-441-01	CUSHION (B)	
5	3-335-193-01	SPRING, CASSETTE	
* 6	3-353-905-01	SHEET, ADHESIVE, MICROPHONE	
* 7	3-353-974-01	CUSHION (MICROPHONE)	
8	3-353-906-01	COVER, SWITCH	

Ref. No.	Part No.	Description	Remark
* 9	A-3016-785-A	MAIN BOARD, COMPLETE	
10	3-353-904-01	BUTTON	
11	3-353-973-01	KNOB (SPEED CONTROL)	
12	3-353-916-01	KNOB (VOLUME)	
13	3-319-288-01	FOOT	
14	X-3353-912-1	CABINET (LOWER) ASSY	
15	1-769-840-11	WIRE (FLAT TYPE) (5 CORE)	
MIC901	1-542-092-11	MICROPHONE, ELECTRET CONDENSER (MIC)	
SP901	1-503-637-11	SPEAKER (5cm)	

6-2. MECHANISM SECTION (MB-2000-58)



Ref. No.	Part No.	Description	Remark
* 51	X-3353-903-1	CHASSIS (OUTSERT) ASSY	
* 52	3-353-957-01	GUIDE, TAPE	
53	3-318-205-01	SCREW (M1.7X2.5)	
54	3-353-979-01	SCREW	
55	3-353-958-01	SPRING, COMPRESSION	
* 56	3-353-959-01	GUIDE (S), TAPE	
* 57	X-3353-909-1	CHASSIS ASSY, HEAD	
58	3-353-964-01	SPRING, TENSION	
59	3-353-953-01	SPRING, TENSION	
60	3-578-242-11	WASHER	
61	X-3353-906-1	PINCH LEVER ASSY	
62	3-335-155-01	SPRING, TENSION (POWER TENSION)	
63	X-3335-109-1	HOLDER COMPLETE ASSY, CASSETTE	
* 64	1-660-115-11	POWER BOARD	
65	1-548-599-21	COUNTER, TAPE (SMALL TYPE)	
* 66	3-335-167-01	LEVER, ERASING PROTECTION	
67	3-353-903-01	KNOB (EJECT)	
* 68	3-353-960-01	PIN, PARALLEL	
* 69	2-277-426-01	CLAMP	
70	3-578-242-21	WASHER	
71	3-323-645-01	STOPPER	
72	3-353-956-01	SPRING, TENSION	
* 73	3-335-116-01	ROLLER, EMP	
74	3-353-954-01	SPRING, TENSION	
* 75	X-3353-908-1	LEVER ASSY, PLAY	
76	3-353-951-01	BELT, DETECTION	
77	X-3353-911-1	PULLEY (RELAY) ASSY	
78	3-353-952-01	BELT, COUNTER	
79	3-727-902-01	SCREW (M1.4), SPECIAL	
80	X-3335-135-1	LIMITER ASSY, FR	
81	3-335-230-01	SPRING, COMPRESSION	
82	3-335-121-01	GEAR, FR	
83	3-704-197-01	SCREW (M1.4X1.6), LOCKING	
84	3-578-138-01	SHIM (t=0.1)	
84	3-578-138-11	SHIM (t=0.2)	
85	3-335-126-01	PLATE, MAGNET	
86	3-335-123-01	SPACER (M) (T=0.1)	
86	3-335-123-11	SPACER (M) (T=0.2)	
86	3-335-123-21	SPACER (M) (T=0.3)	
87	X-3335-107-1	LIMITER (B) ASSY, FWD	
88	X-3353-907-1	GEAR ASSY, IDLER	
89	3-353-955-01	SPRING, TENSION	
90	3-701-436-01	WASHER, 1.6 POLYETHYLENE (t=0.13)	
90	3-701-436-11	WASHER, 1.6 POLYETHYLENE (t=0.25)	
91	X-3353-910-1	WHEEL ASSY, CAPSTAN	
92	3-554-106-00	BELT, CAPSTAN	
93	3-570-615-00	POLY-WASHER (DIA.1.2)	
* 94	3-353-950-01	LEVER (SAFETY)	
95	3-342-759-41	SCREW (B1.7X4), TAPPING	
HRPE901	1-500-317-11	HEAD, MAGNETIC (REC/PB/ERASE)	
IC501	8-759-701-75	IC NJM7805FA	
M901	1-698-452-11	MOTOR, DC (FWD)	
M902	X-3371-751-1	MOTOR ASSY, FR (F/R)	
PM901	1-454-486-11	SOLENOID, PLUNGER	
S901	1-554-385-00	SWITCH, MICRO (ERASE PROOF)	

MAIN

7. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Abbreviation
  AUS : Australian model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA ..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
*	A-3016-785-A	MAIN BOARD, COMPLETE			
		**********			
	3-353-904-01	BUTTON			
	3-353-916-01	KNOB (VOLUME)			
	3-353-973-01	KNOB (SPEED CONTROL)			
		< CAPACITOR >			
C101	1-124-463-00	ELECT	0.1uF	20%	50V
C102	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C103	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C104	1-124-907-11	ELECT	10uF	20%	50V
C105	1-124-463-00	ELECT	0.1uF	20%	50V
C106	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C107	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C108	1-126-233-11	ELECT	22uF	20%	50V
C109	1-124-907-11	ELECT	10uF	20%	50V
C110	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C111	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C112	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	50V
C113	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C114	1-126-963-11	ELECT	4.7uF	20%	50V
C115	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C116	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C117	1-124-463-00	ELECT	0.1uF	20%	50V
C118	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C119	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C120	1-126-968-11	ELECT	100uF	20%	6.3V
C121	1-124-907-11	ELECT	10uF	20%	50V
C122-124					
	1-126-233-11	ELECT	22uF	20%	50V
C125	1-124-907-11	ELECT	10uF	20%	50V
C126	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C127	1-126-968-11	ELECT	100uF	20%	6.3V
C128	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C129	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C131	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C132	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C134	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C135	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C136	1-124-907-11	ELECT	10uF	20%	50V
C137	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C138	1-126-968-11	ELECT	100uF	20%	6.3V
C139	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C140-144					
	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C301	1-124-907-11	ELECT	10uF	20%	50V
C302	1-124-902-00	ELECT	0.47uF	20%	50V
C304	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C305	1-124-903-11	ELECT	1uF	20%	50V
C306	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C307	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C308	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C309	1-124-902-00	ELECT	0.47uF	20%	50V
C310	1-126-968-11	ELECT	100uF	20%	6.3V
C401	1-126-233-11	ELECT	22uF	20%	50V
C402-405					
	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C406	1-124-903-11	ELECT	1uF	20%	50V
C408	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C409	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C605	1-126-233-11	ELECT	22uF	20%	50V
C606	1-126-968-11	ELECT	100uF	20%	6.3V
C607	1-164-346-11	CERAMIC CHIP	1uF		16V
C620-622					
	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C623	1-104-664-11	ELECT	47uF	20%	16V
C651	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C652	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C653	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C654	1-135-091-00	TANTAL. CHIP	1uF	20%	16V
C655	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C656	1-135-176-21	TANTALUM CHIP	0.68uF	10%	20V
C657	1-135-073-00	TANTALUM CHIP	0.33uF	10%	35V
C658	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C659	1-135-072-21	TANTALUM CHIP	0.22uF	10%	35V
C660	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
CN101	1-506-467-11	PIN, CONNECTOR 2P			

Ref. No.	Part No.	Description	Remark
CN102	1-506-469-11	PIN, CONNECTOR 4P	
CN103	1-506-467-11	PIN, CONNECTOR 2P	
CN401	1-568-229-11	SOCKET, CONNECTOR 8P (CONTROL UNIT)	
CN402	1-506-467-11	PIN, CONNECTOR 2P	
* CN502	1-568-824-11	SOCKET, CONNECTOR 5P	
CN601	1-506-469-11	PIN, CONNECTOR 4P	
* CN602	1-564-001-11	PIN, CONNECTOR 2P	
		< DIODE >	
D101	8-719-812-41	LED TLR124 (REC)	
D102	8-719-938-67	LED GL-3EG8 (OPR)	
D301	8-719-105-52	DIODE RD3.6M-B2	
D401	8-719-914-44	DIODE DAP202K	
D402	8-719-914-44	DIODE DAP202K	
D404	8-719-914-44	DIODE DAP202K	
D405	8-719-914-44	DIODE DAP202K	
D601	8-719-105-45	DIODE RD3.3M-B1	
D603	8-719-049-53	DIODE MA3039-(TX)	
D604	8-719-105-91	DIODE RD5.6M-B2	
		< IC >	
IC101	8-752-036-38	IC CXA1347N	
IC102	8-759-008-67	IC MC14066BF	
IC401	8-759-349-56	IC uPD75402AGB-568-3B4	
IC602	8-759-822-09	IC LB1641	
IC604	8-759-008-67	IC MC14066BF	
IC651	8-759-008-67	IC MC14066BF	
IC652	8-759-996-13	IC TLP326ADB	
		< JACK >	
J101	1-566-740-11	JACK (MIC)	
J102	1-507-896-00	JACK, HEADPHONE (EAR)	
		< PHOTO INTERRUPTER >	
PH401	8-719-980-75	PHOTO INTRRUPTER GP2S24-C	
		< TRANSISTOR >	
Q101	8-729-901-46	TRANSISTOR DTA114YK	
Q102	8-729-403-17	TRANSISTOR XN1215	
Q103	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q302	8-729-900-52	TRANSISTOR DTC114YK	
Q303	8-729-900-52	TRANSISTOR DTC114YK	
Q304	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q305	8-729-900-52	TRANSISTOR DTC114YK	
Q306	8-729-901-46	TRANSISTOR DTA114YK	
Q307	8-729-901-46	TRANSISTOR DTA114YK	
Q308	8-729-900-52	TRANSISTOR DTC114YK	
Q403	8-729-421-22	TRANSISTOR UN2211	

Ref. No.	Part No.	Description	Remark
Q601	8-729-900-52	TRANSISTOR DTC114YK	
Q602	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q603	8-729-101-07	TRANSISTOR 2SB798-DL	
Q604	8-729-901-46	TRANSISTOR DTA114YK	
Q605	8-729-900-52	TRANSISTOR DTC114YK	
Q606	8-729-900-52	TRANSISTOR DTC114YK	
Q607	8-729-900-52	TRANSISTOR DTC114YK	
Q608	8-729-900-52	TRANSISTOR DTC114YK	
Q609	8-729-900-52	TRANSISTOR DTC114YK	
Q613	8-729-900-52	TRANSISTOR DTC114YK	
Q617	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q618	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q651	8-729-900-52	TRANSISTOR DTC114YK	
Q652	8-729-900-52	TRANSISTOR DTC114YK	
Q653	8-729-900-52	TRANSISTOR DTC114YK	
Q654	8-729-900-52	TRANSISTOR DTC114YK	
		< RESISTOR >	
R101	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R102	1-216-049-11	METAL GLAZE 1K 5% 1/10W	
R103	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R104	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R105	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R106	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R107	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R108	1-216-109-00	METAL CHIP 330K 5% 1/10W	
R109	1-216-091-00	METAL CHIP 56K 5% 1/10W	
R110	1-216-041-00	METAL CHIP 470 5% 1/10W	
R111	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R112	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R114	1-216-306-11	METAL CHIP 3.9 5% 1/10W	
R115	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R116	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R117	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R118	1-216-306-11	METAL CHIP 3.9 5% 1/10W	
R119	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R120	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R122	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R123	1-216-041-00	METAL CHIP 470 5% 1/10W	
R124	1-216-033-00	METAL CHIP 220 5% 1/10W	
R301	1-216-045-00	METAL CHIP 680 5% 1/10W	
R303	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R304	1-216-043-00	METAL CHIP 560 5% 1/10W	
R305	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R306	1-216-041-00	METAL CHIP 470 5% 1/10W	
R307	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R308	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R309	1-216-129-00	METAL CHIP 2.2M 5% 1/10W	

MAIN POWER

Ref. No.	Part No.	Description			Remark
R310	1-216-073-00	METAL CHIP	10K	5%	1/10W
R311	1-216-073-00	METAL CHIP	10K	5%	1/10W
R312	1-216-083-00	METAL CHIP	27K	5%	1/10W
R313	1-216-093-00	METAL CHIP	68K	5%	1/10W
R314	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R315	1-216-045-00	METAL GLAZE	680	5%	1/10W
R401	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R403-406					
	1-216-073-00	METAL CHIP	10K	5%	1/10W
R407	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R408	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R411	1-216-033-00	METAL CHIP	220	5%	1/10W
R413	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R415	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R418	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R419	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R605-608					
	1-216-073-00	METAL CHIP	10K	5%	1/10W
R609	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R628	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R629	1-216-033-00	METAL CHIP	220	5%	1/10W
R630	1-216-025-00	METAL GLAZE	100	5%	1/10W
R631	1-216-025-00	METAL GLAZE	100	5%	1/10W
R639	1-216-025-00	METAL GLAZE	100	5%	1/10W
R640	1-216-025-00	METAL GLAZE	100	5%	1/10W
R651	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R652	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R653	1-216-075-00	METAL CHIP	12K	5%	1/10W
R654	1-216-079-00	METAL CHIP	18K	5%	1/10W
R655	1-216-093-00	METAL CHIP	68K	5%	1/10W
R656	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R657	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R658	1-216-083-00	METAL CHIP	27K	5%	1/10W
R659-661					
	1-216-073-00	METAL CHIP	10K	5%	1/10W

< VARIABLE RESISTOR >

RV101	1-238-646-11	RES, VAR, CARBON 10K (VOLUME)
RV651	1-225-188-11	RES, VAR, CARBON 10K (SPEED CONTROL)
RV652	1-237-723-11	RES, ADJ, CARBON 4.7K
RV653	1-237-723-11	RES, ADJ, CARBON 4.7K

< SWITCH >

S101	1-552-334-00	SWITCH, BAND CHANGER (TONE)
S401	1-554-303-21	SWITCH, TACTILE (▶▶ FF)
S402	1-554-303-21	SWITCH, TACTILE (▶ PLAY)
S403	1-554-303-21	SWITCH, TACTILE (■ STOP)
S404	1-554-303-21	SWITCH, TACTILE (◀◀ REW)
S405	1-554-481-00	SWITCH, SLIDE (REC ← STOP)
S406	1-554-277-00	SWITCH, SLIDE (REV TIME)
S407	1-552-334-00	SWITCH, BAND CHANGER (SPEED)

< VIBRATOR >

X401	1-577-101-11	VIBRATOR, CERAMIC (4.19MHz)

****

*	1-660-115-11	POWER BOARD			
		**********			
	7-621-770-67	SCREW +B 2.6X6			

< CAPACITOR >

C407	1-124-556-11	ELECT	2200uF	20%	16V
C501	1-126-233-11	ELECT	22uF	20%	50V
C502	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C503	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C504	1-124-556-11	ELECT	2200uF	20%	16V

< CONNECTOR >

CN403	1-506-481-11	PIN, CONNECTOR 2P
CN503	1-568-848-41	SOCKET, CONNECTOR 5P

< JACK >

CN501	1-562-961-11	JACK (DC IN 9V)

< DIODE >

D403	8-719-210-33	DIODE EC10DS2
D501	8-719-210-33	DIODE EC10DS2

< IC >

IC501	8-759-701-75	IC NJM7805FA

< TRANSISTOR >

Q401	8-729-101-07	TRANSISTOR 2SB798-DL
Q402	8-729-403-17	TRANSISTOR XN1215
Q404	8-729-101-07	TRANSISTOR 2SB798-DL
Q405	8-729-900-52	TRANSISTOR DTC114YK
Q406	8-729-140-75	TRANSISTOR 2SD999-CLCK
Q407	8-729-101-07	TRANSISTOR 2SB798-DL
Q408	8-729-900-52	TRANSISTOR DTC114YK

< RESISTOR >

R402	1-216-041-00	METAL CHIP	470	5%	1/10W
R409	1-216-045-00	METAL CHIP	680	5%	1/10W
R410	1-216-073-00	METAL CHIP	10K	5%	1/10W
R412	1-216-045-00	METAL CHIP	680	5%	1/10W
R414	1-216-049-11	METAL GLAZE	1K	5%	1/10W

****

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
15	1-769-840-11	WIRE (FLAT TYPE) (5 CORE)	
65	1-548-599-21	COUNTER, TAPE (SMALL TYPE)	
HRPE901	1-500-317-11	HEAD, MAGNETIC (REC/PB/ERASE)	
M901	1-698-452-11	MOTOR, DC (FWD)	
M902	X-3371-751-1	MOTOR ASSY, FR (F/R)	
MIC901	1-542-092-11	MICROPHONE, ELECTRET CONDENSER (MIC)	
PM901	1-454-486-11	SOLENOID, PLUNGER	
S901	1-554-385-00	SWITCH, MICRO (ERASE PROOF)	
SP901	1-503-637-11	SPEAKER (5cm)	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
⚠	1-463-691-11	ADAPTOR, AC (AC-930F) (US,Canadian)	
⚠	1-463-701-11	ADAPTOR, AC (AC-930A) (Australian)	
⚠	1-465-568-21	ADAPTOR, AC (AC-930A) (UK)	
⚠	1-473-998-11	ADAPTOR, AC (AC-930F) (AEP)	
	1-771-219-16	CONTROL UNIT, FOOT (FS-80)	
	3-750-533-16	MANUAL, INSTRUCTION (ENGLISH,FRENCH, GERMAN) (2000:EXCEPT US)	
	3-750-533-24	MANUAL, INSTRUCTION (ENGLISH) (2000:US)	
	3-754-128-14	MANUAL, INSTRUCTION (ENGLISH,FRENCH, GERMAN) (2020:EXCEPT US)	
	3-754-128-24	MANUAL, INSTRUCTION (ENGLISH) (2020:US)	
	8-916-911-30	CONTROL UNIT, FOOT (FS-25)	
	8-952-447-90	HEADPHONE (MDR-006L)	
	8-953-098-90	HEADPHONE (DE-45)	
	A-3010-245-A	CONTROL UNIT, HAND (HU-25)	
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-621-770-87	SCREW +P 2.6X5	
#2	7-685-134-19	SCREW +P 2.6X8 TYPE2 NON-SLIT	
#3	7-627-552-28	SCREW, PRECISION +P 1.7X2	
#4	7-682-646-09	SCREW +PS 3X5	
#5	7-621-255-15	SCREW +P 2X3	
#6	7-621-770-67	SCREW +B 2.6X6	
#7	7-621-257-55	SCREW +P 2.3X8	
#8	7-627-553-27	SCREW, PRECISION +P 2X2.5	
#9	7-627-552-07	SCREW, PRECISION +P 1.7X2.5	

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-953-888-83

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Personal A&V Products Div.

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M-2000/2020

FS-25/80/HU-25

SONY

US Model
AEP Model

SERVICE MANUAL

Ver. 1.1 2005. 08

SUPPLEMENT-5

File this supplement with the service manual.

Subject : Specification change by measures of environmental problems

Change to the specifications are made to implement environmental measures for the model with the serial No. 100001 and later.
Check the serial No. when servicing or inspecting the set.
Mechanical adjustments, electrical adjustments, printed wiring boards, schematic diagram, exploded view and electrical parts list of new type are described in this supplement-5.

1. MECHANICAL ADJUSTMENTS

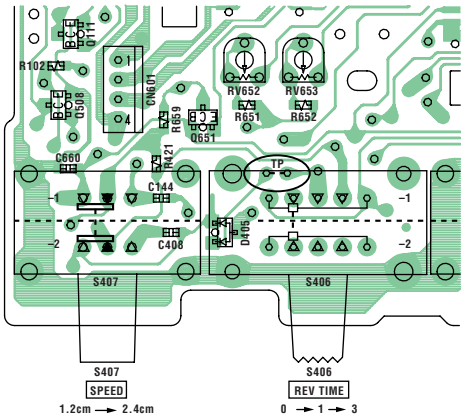
PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback/erase head — pinch roller
   rubber belts — capstan
   idlers
2. Demagnetize the record/playback/erase head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Power Supply Voltage: 9 V dc

Note: When performing mechanism deck rotation check opening the main board, solder the TP portion.
After the check, unsolder TP portion.

– MAIN board (Side B) –



Torque Measurement

Mode	Torque Meter	Meter Reading
Forward	CQ-103M	5 to 13 g • cm (0.07 to 0.18 oz • inch)
Fast Forward and Rewind	CQ-201M	40 to 95 g • cm 0.56 to 1.32 oz • inch)

Tape Tension Measurement

Mode	Tension Meter	Meter Reading
Forward	CQ-403M	More than 45 g (1.59 oz)

2. ELECTRICAL ADJUSTMENTS

PRECAUTION

1. The adjustments should be performed in the order given in this service manual.
2. Switches and controls should be set as follows unless otherwise specified.
   • VOLUME (RV101) control: 10 (max)
   • SPEED CONTROL (RV651) control: 0 (mechanical mid)
   • TONE (S101) switch: HIGH
   • STOP/REC (S405) switch: STOP
   • SPEED (S407) switch: 2.4cm
   • REV TIME (S406) switch: 0

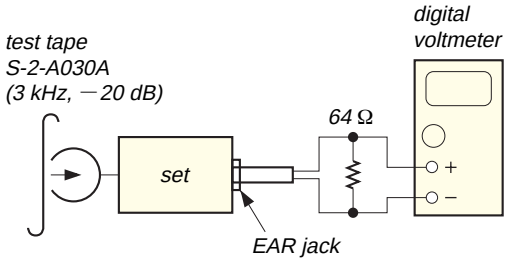
Test Tape

Type	Signal	Used for
S-2-A030A	3 kHz, –20 dB	head azimuth adjustment
WS-24	3 kHz, –10 dB	tape speed adjustment

Record/playback/erase Head Azimuth Adjustment

Procedure:

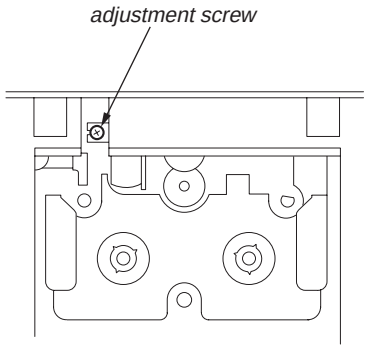
Mode: playback



Turn the adjustment screw to obtain the maximum reading on digital voltmeter.

Note: Finish the screw adjustment with a turn in the clockwise direction.
After the adjustment, apply suitable locking compound to the adjustment screw.

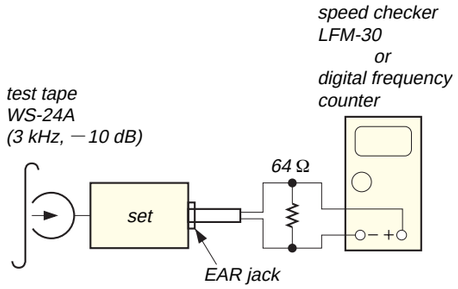
Adjustment Location:



Tape Speed Adjustment

Procedure:

Mode: playback



- Perform 2.4cm/s normal speed adjustment before 1.2cm/s normal speed adjustment.

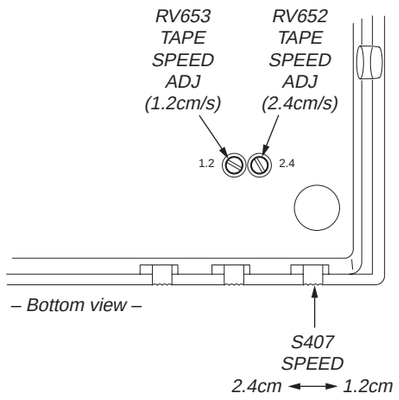
Normal speed	SPEED (S407)	Adjustment point	Frequency counter
2.4cm/s	2.4cm	RV652	2,985 to 3,015 Hz
1.2cm/s	1.2cm	RV653	1,492 to 1,508 Hz

Confirm that the reading on digital frequency counter is specification value as shown below.

SPEED CONTROL (RV651)	SPEED (S407)	Frequency counter
+5 (max)	2.4cm	more than 4,500 Hz
	1.2cm	more than 2,150 Hz
–5 (min)	2.4cm	less than 2,500 Hz
	1.2cm	less than 1,250 Hz

Frequency difference between the beginning and the end of the tape should be within ±1% (2.4cm/s normal speed: 30 Hz, 1.2cm/s normal speed: 15 Hz).

Adjustment Location:



3. DIAGRAMS

• NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

for schematic diagram:

- All capacitors are in μF unless otherwise noted. (p: pF) 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.
- ▬ : B+ Line.
- ▭ : adjustment for repair.
- Power voltage is dc 9 V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PLAY
  ( ) : REC
  < > : FF
  [ ] : REW
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  : PB
  : REC
- (( )) : Page of Supplement-5.

for printed wiring boards:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- △ : internal component.
- ▬ : Pattern from the side which enables seeing. (The other layer's patterns are not indicated.)

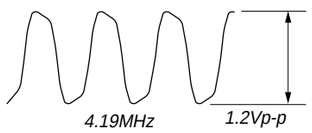
Caution:

Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

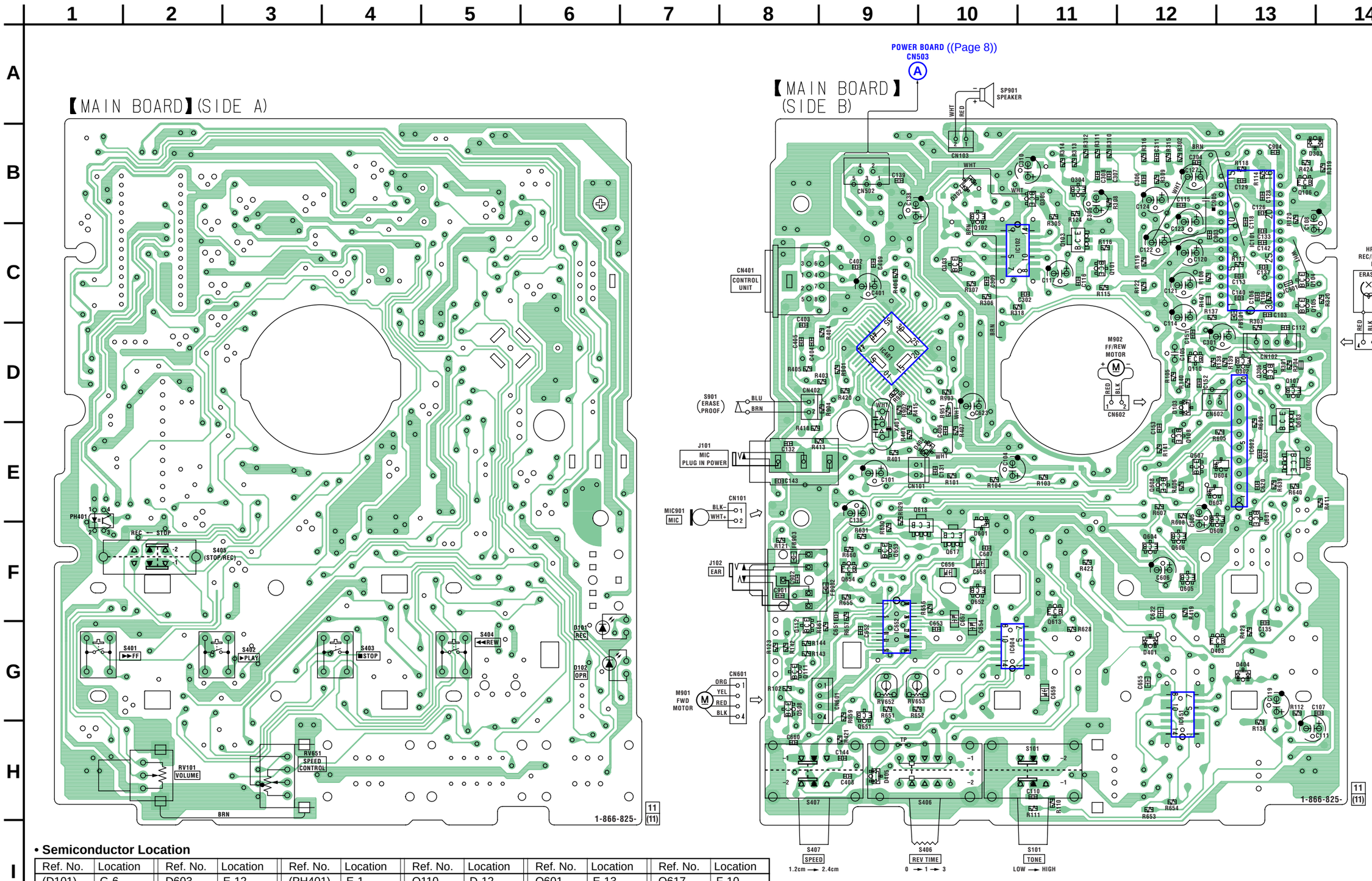
- (( )) : Page of Supplement-5.

• Waveform

① IC401 ⑦ (X2)



3-1. PRINTED WIRING BOARD — MAIN SECTION —

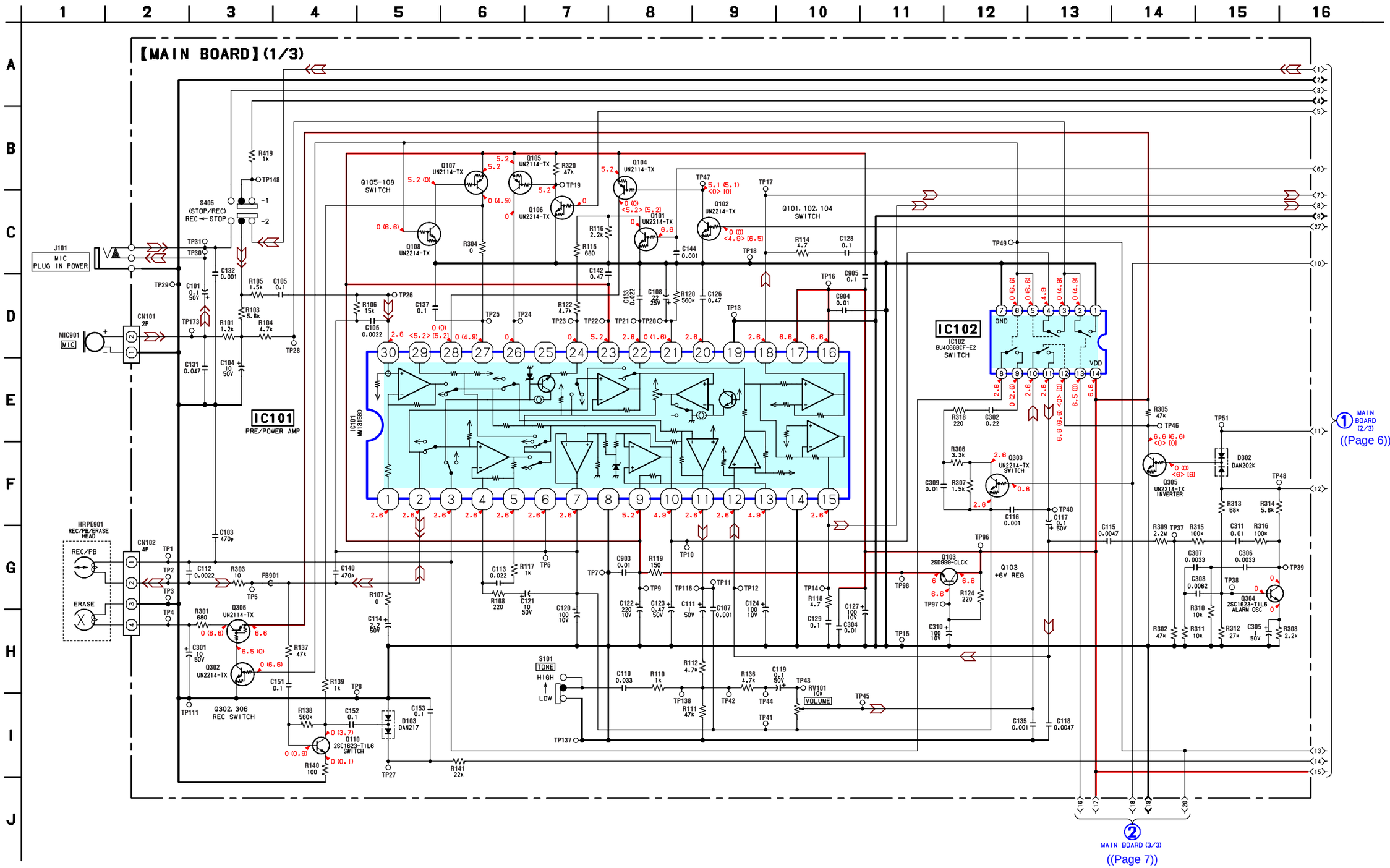


• Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
(D101)	G-6	D603	E-12	(PH401)	E-1	Q110	D-12	Q601	E-13	Q617	F-10
(D102)	G-6	D604	E-13			Q111	G-8	Q602	E-13	Q618	F-10
D103	D-12			Q101	C-11	Q112	F-8	Q603	D-13	Q651	G-9
D302	B-10	IC101	C-13	Q102	B-10	Q302	D-13	Q604	F-12	Q652	F-10
D303	B-13	IC102	C-11	Q103	C-11	Q303	C-10	Q605	F-12	Q653	F-9
D401	G-12	IC401	D-9	Q104	C-13	Q304	B-11	Q606	F-12	Q654	F-9
D402	E-10	IC602	E-13	Q105	C-13	Q305	B-11	Q607	E-12		
D404	G-13	IC604	G-10	Q106	B-13	Q306	D-13	Q608	E-12		
D405	H-9	IC651	G-12	Q107	D-13	Q403	G-13	Q609	F-13		
D601	F-10	IC652	G-9	Q108	E-12	Q508	G-8	Q613	F-11		

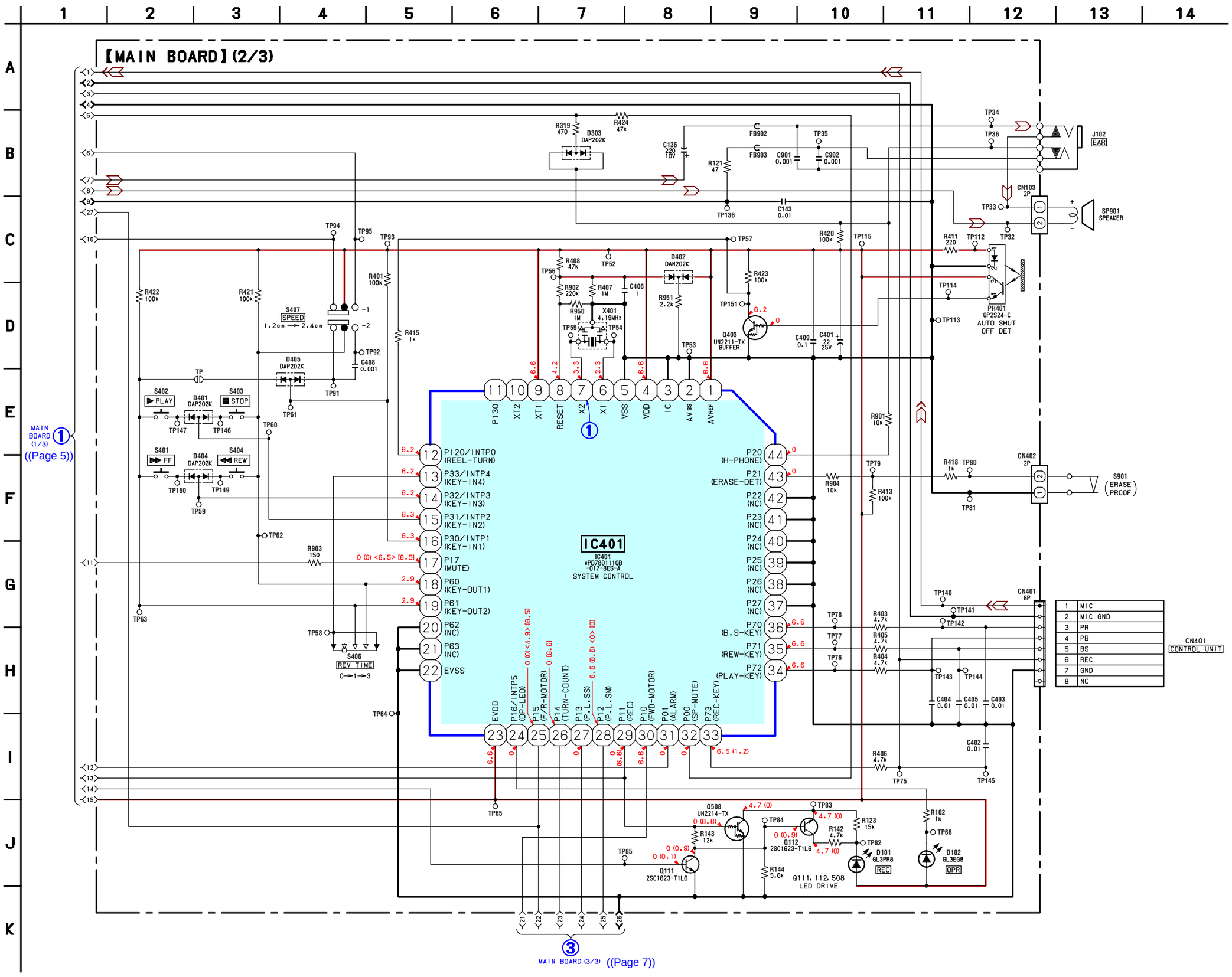
( ): SIDE A

3-2. SCHEMATIC DIAGRAM — MAIN SECTION (1/3) —

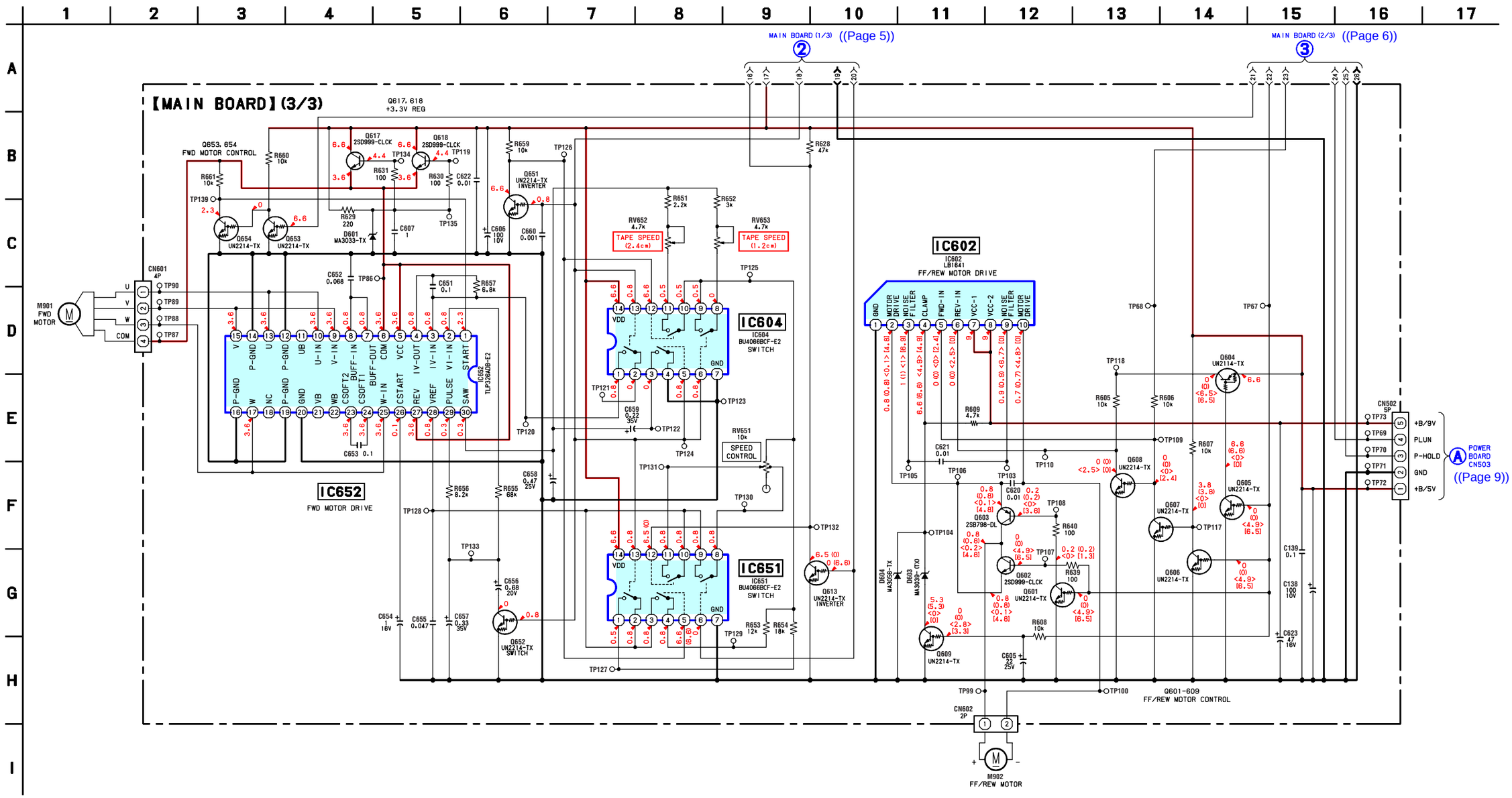


3-3. SCHEMATIC DIAGRAM — MAIN SECTION (2/3) —

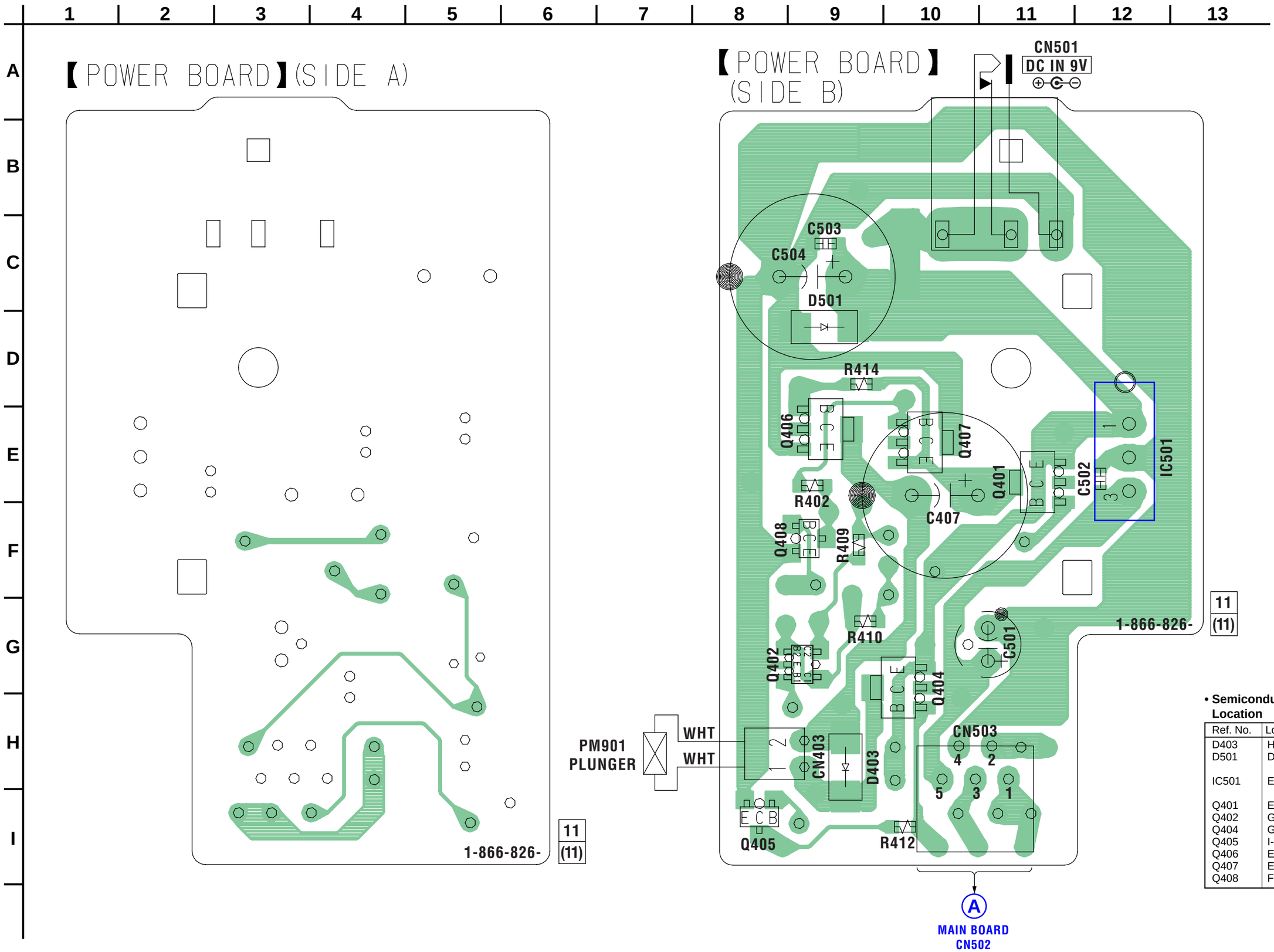
- Refer to page 3 for Waveform.
- Refer to page 10 for IC Pin Description.



3-4. SCHEMATIC DIAGRAM — MAIN SECTION (3/3) —



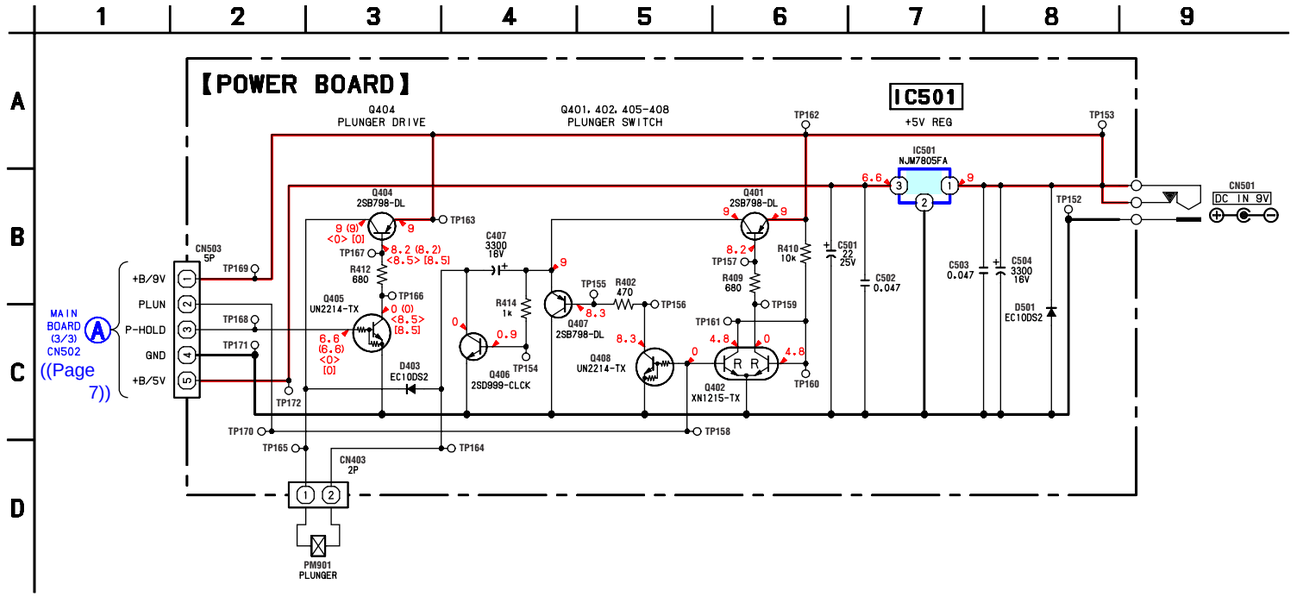
3-5. PRINTED WIRING BOARD — POWER SECTION —



• **Semiconductor Location**

Ref. No.	Location
D403	H-9
D501	D-9
IC501	E-12
Q401	E-11
Q402	G-9
Q404	G-10
Q405	I-8
Q406	E-9
Q407	E-10
Q408	F-9

3-6. SCHEMATIC DIAGRAM — POWER SECTION —



9 *9*

• IC Pin Description

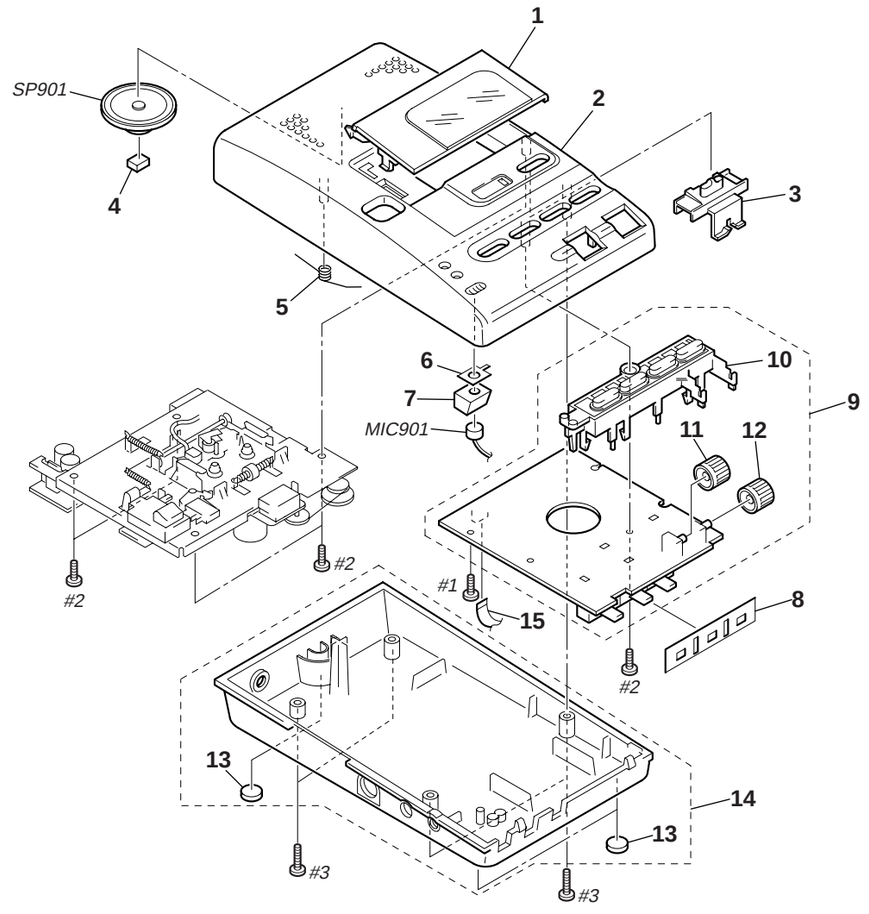
IC401 µPD780111GB-017-8ES-A (SYSTEM CONTROL) (MAIN board (2/3))

Pin No.	Pin Name	I/O	Pin Description
1	AVREF	—	Reference voltage input for A/D converter. (+5 V)
2	AVSS	—	Ground for A/D converter.
3	IC	—	Test pin (Fixed at L)
4	VDD	—	Power supply pin (+5 V)
5	VSS	—	Ground
6	X1	—	Main system clock (4.19 MHz)
7	X2	—	Main system clock (4.19 MHz)
8	RESET	—	System reset input
9	XT1	—	Sub system clock (Fixed at H)
10	XT2	—	Sub system clock (Open)
11	P130	O	Not used. (Open)
12	P120/INTP0	I	Reel pulse input
13	P33/INTP4	I	Key input 4
14	P32/INTP3	I	Key input 3
15	P31/INTP2	I	Key input 2
16	P30/INTP1	I	Key input 1
17	P17	O	Mute output
18	P60	O	Key output 1
19	P61	O	Key output 2
20, 21	P62, P63	I	Not used. (Fixed at L)
22	EVSS	—	Ground
23	EVDD	—	Power supply pin (+5 V)
24	P16/INTP5	O	OPR LED output
25	P15	O	Motor ON/OFF output for FF/REW.
26	P14	O	Motor rotational direction ON/OFF output for FF/REW.
27	P13	O	REC/PB/ERASE head forward movement output
28	P12	O	REC/PB/ERASE head forward HOLD output
29	P11	O	Record output
30	P10	O	Motor ON/OFF output for REC/PB.
31	P01	O	Alarm output
32	P00	O	Speaker mute output
33	P73	I	Hand control unit REC input
34	P72	I	Hand control unit PLAY input
35	P71	I	Hand control unit/foot control unit REW input
36	P70	I	Foot control unit B.SPACE input
37 to 42	P27 to P22	I	Not used. (Fixed at L)
43	P21	I	Erase proof switch input
44	P20	I	Headphone switch input

4. EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ... (RED)
  ↑ Parts Color ↑ Cabinet's Color
- Accessories are given in the last of this parts list.

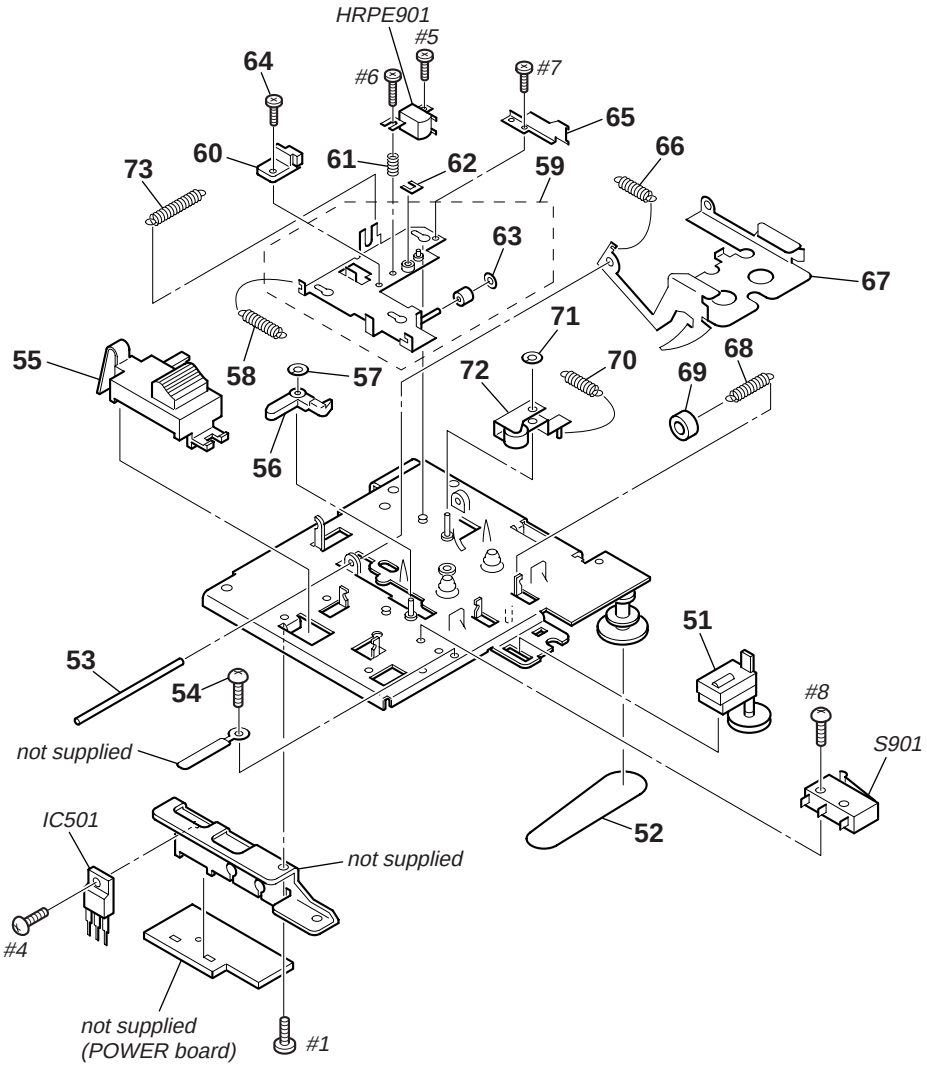
4-1. CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	X-3353-902-1	LID ASSY, CASSETTE	
2	X-3353-901-1	CABINET (UPPER) ASSY (2000)	
2	X-3363-743-1	CABINET (UPPER) ASSY (2020)	
3	3-353-902-01	KNOB (REC)	
4	3-237-071-01	CUSHION (SP)	
5	3-335-193-01	SPRING, CASSETTE	
* 6	3-353-905-01	SHEET, ADHESIVE, MICROPHONE	
* 7	3-353-974-01	CUSHION (MICROPHONE)	
8	3-353-906-01	COVER, SWITCH	
9	A-1124-368-A	MAIN BOARD, COMPLETE	
10	3-353-904-01	BUTTON	

Ref. No.	Part No.	Description	Remark
11	3-353-973-01	KNOB (SPEED CONTROL)	
12	3-353-916-01	KNOB (VOLUME)	
13	3-319-288-01	FOOT	
14	X-3353-912-1	CABINET (LOWER) ASSY	
15	1-769-840-11	WIRE (FLAT TYPE) (5 CORE)	
MIC901	1-542-092-11	MICROPHONE, ELECTRET CONDENSER (MIC)	
SP901	1-529-379-12	SPEAKER (5cm)	
#1	7-621-770-87	SCREW +P 2.6X5	
#2	7-685-534-14	SCREW +BTP 2.6X8 TYPE2 N-S	
#3	7-685-135-19	SCREW +P 2.6X10 TYPE2 NON-SLIT	

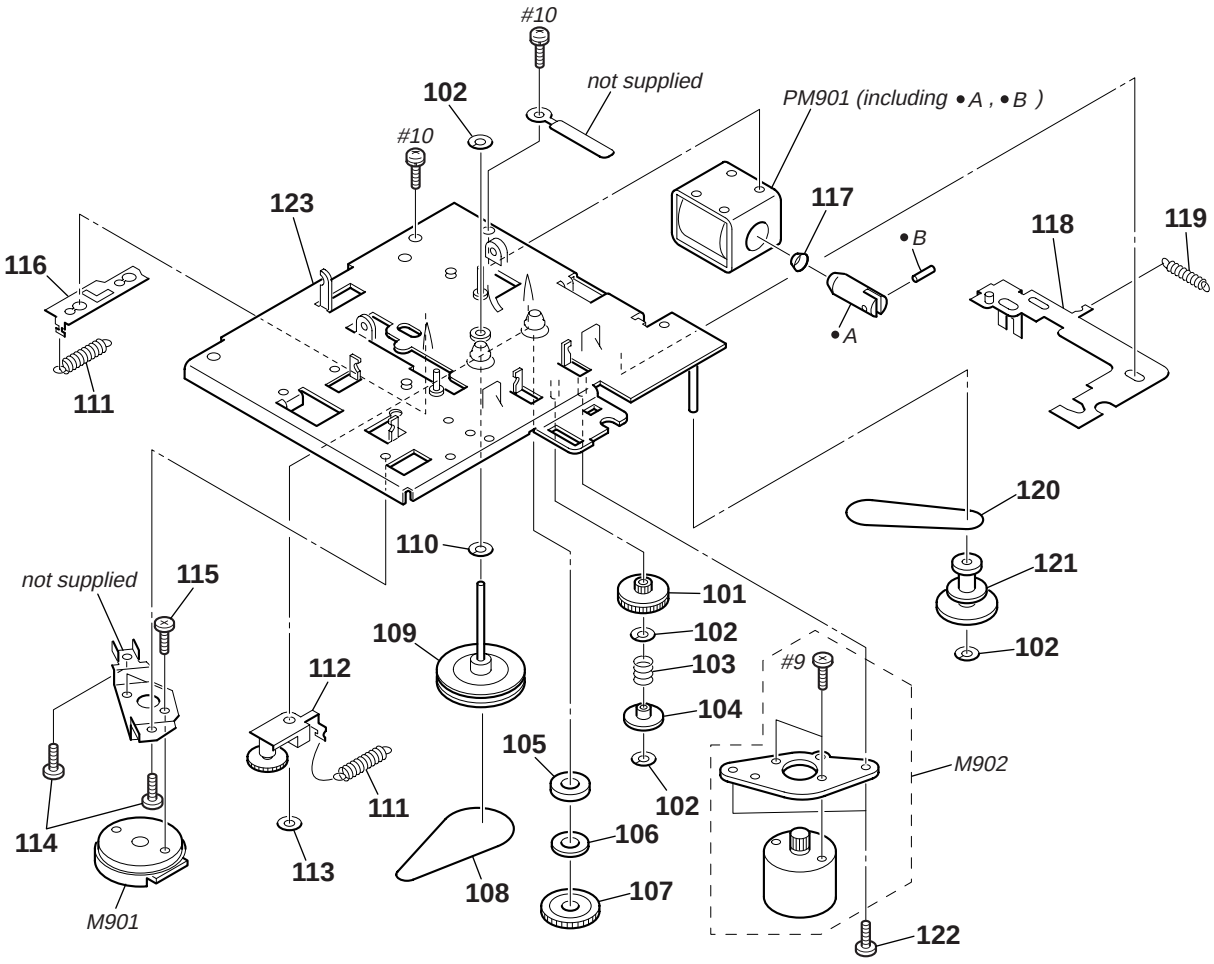
4-2. MECHANISM SECTION (1)
(MB-2000-58)



Ref. No.	Part No.	Description	Remark
51	1-548-599-21	COUNTER, TAPE (SMALL TYPE)	
52	3-353-952-01	BELT	
* 53	3-353-960-01	PIN, PARALLEL	
54	3-713-786-51	SCREW +P 2X3	
55	3-353-903-01	KNOB (EJECT)	
* 56	3-335-167-01	LEVER, ERASING PROTECTION	
57	3-578-242-21	WASHER	
58	3-353-964-01	SPRING, TENSION	
* 59	X-3353-909-4	CHASSIS ASSY, HEAD	
* 60	3-353-959-01	GUIDE (S), TAPE	
61	3-353-958-01	SPRING, COMPRESSION	
62	3-578-138-01	SHIM (t=0.1)	
62	3-578-138-11	SHIM (t=0.2)	
63	3-570-615-02	POLY-WASHER (DIA.1.2)	
64	3-318-205-21	SCREW (M1.7X2.5)	
* 65	3-353-957-01	GUIDE, TAPE	
66	3-335-155-01	SPRING, TENSION (POWER TENSION)	

Ref. No.	Part No.	Description	Remark
67	X-3335-109-4	HOLDER COMPLETE ASSY, CASSETTE	
68	3-353-956-01	SPRING, TENSION	
* 69	3-335-116-01	ROLLER, EMP	
70	3-555-212-00	SPRING, TENSION	
71	3-578-242-11	WASHER	
72	X-3353-906-1	LEVER BLOCK ASSY, PINCH	
73	3-359-162-01	SPRING, TENSION	
HRPE901	1-500-317-11	HEAD, MAGNETIC (REC/PB/ERASE)	
IC501	8-759-701-75	IC NJM7805FA	
S901	1-554-385-00	SWITCH, MICRO (ERASE PROOF)	
#1	7-621-770-87	SCREW +P 2.6X5	
#4	7-621-770-67	SCREW +B 2.6X6	
#5	7-627-552-07	SCREW, PRECISION +P 1.7X2.5	
#6	7-627-852-67	SCREW, PRECISION +P 1.7X6 TYPE3	
#7	7-627-552-28	SCREW, PRECISION +P 1.7X2	
#8	7-621-257-55	SCREW +P 2.3X8	

4-3. MECHANISM SECTION (2)
(MB-2000-58)



Ref. No.	Part No.	Description	Remark
101	X-3335-135-1	LIMITER ASSY, FR	
102	3-578-242-11	WASHER	
103	3-335-230-01	SPRING, COMPRESSION	
104	3-335-121-01	GEAR, FR	
105	3-335-126-02	PLATE, MAGNET	
106	3-335-123-01	SPACER (M) (t=0.1)	
106	3-335-123-11	SPACER (M) (t=0.2)	
106	3-335-123-21	SPACER (M) (t=0.3)	
107	X-3335-107-1	LIMITER (B) ASSY, FWD	
108	3-554-106-00	BELT	
109	X-3372-013-1	WHEEL ASSY, CAPSTAN	
110	3-701-436-01	WASHER, 1.6 POLYETHYLENE (t=0.13)	
110	3-701-436-11	WASHER, 1.6 POLYETHYLENE (t=0.25)	
111	3-353-955-01	SPRING, TENSION	
112	X-3353-907-5	GEAR ASSY, IDLER	
113	3-578-242-21	WASHER	

Ref. No.	Part No.	Description	Remark
114	3-727-902-02	SCREW (M1.4), SPECIAL	
115	4-218-233-05	SCREW (1.4), MI	
* 116	3-353-950-02	LEVER (SAFETY)	
117	3-323-645-01	STOPPER	
* 118	X-3353-908-2	LEVER ASSY, PLAY	
119	3-353-954-01	SPRING, TENSION	
120	3-353-951-01	BELT	
121	X-3353-911-1	PULLEY (RELAY) ASSY	
122	3-342-759-41	SCREW (B1.7X4), TAPPING	
* 123	X-3353-903-8	CHASSIS (OUTSERT) ASSY	
M901	1-698-452-14	MOTOR, DC (FWD)	
M902	X-3371-751-1	MOTOR ASSY, FR (FF/REW)	
PM901	1-454-486-12	SOLENOID, PLUNGER	
#9	7-627-553-27	SCREW, PRECISION +P 2X2.5	
#10	7-682-646-09	SCREW +PS 3X5	

MAIN

5. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ, for example:
  uA.. : μA.. uPA.. : μPA..
  uPB.. : μPB.. uPC.. : μPC.. uPD.. : μPD..
- CAPACITORS
  uF : μF
- COILS
  uH : μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-1124-368-A	MAIN BOARD, COMPLETE			
		**********			
	3-353-904-01	BUTTON			
	3-353-916-01	KNOB (VOLUME)			
	3-353-973-01	KNOB (SPEED CONTROL)			
	4-974-970-01	SHEET (DC), INSULATING			
		< CAPACITOR >			
C101	1-126-956-11	ELECT	0.1uF	20%	50V
C103	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C104	1-126-964-11	ELECT	10uF	20%	50V
C105	1-136-165-00	FILM	0.1uF	5%	50V
C106	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C107	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C108	1-128-551-11	ELECT	22uF	20%	63V
C110	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C111	1-126-960-11	ELECT	1uF	20%	50V
C112	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C113	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C114	1-126-961-11	ELECT	2.2uF	20%	50V
C115	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C116	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C117	1-126-956-11	ELECT	0.1uF	20%	50V
C118	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C119	1-126-956-11	ELECT	0.1uF	20%	50V
C120	1-104-665-11	ELECT	100uF	20%	25V
C121	1-126-964-11	ELECT	10uF	20%	50V
C122	1-126-934-11	ELECT	220uF	20%	16V
C123	1-126-959-11	ELECT	0.47uF	20%	50V
C124	1-104-665-11	ELECT	100uF	20%	25V
C126	1-165-647-11	CERAMIC CHIP	0.47uF	10%	6.3V
C127	1-104-665-11	ELECT	100uF	20%	25V
C128	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C129	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C131	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C132	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C133	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C135	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C136	1-126-934-11	ELECT	220uF	20%	16V
C137	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C138	1-104-665-11	ELECT	100uF	20%	25V
C139	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C140	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C142	1-165-647-11	CERAMIC CHIP	0.47uF	10%	6.3V

Ref. No.	Part No.	Description			Remark
C143	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C144	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C151	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C152	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C153	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C301	1-126-964-11	ELECT	10uF	20%	50V
C302	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C305	1-126-960-11	ELECT	1uF	20%	50V
C306	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C307	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C308	1-164-174-11	CERAMIC CHIP	0.0082uF	10%	25V
C309	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C310	1-104-665-11	ELECT	100uF	20%	25V
C311	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C401	1-128-551-11	ELECT	22uF	20%	63V
C402	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C403	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C404	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C405	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C406	1-115-156-11	CERAMIC CHIP	1uF		10V
C408	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C409	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C605	1-128-551-11	ELECT	22uF	20%	63V
C606	1-104-665-11	ELECT	100uF	20%	25V
C607	1-115-156-11	CERAMIC CHIP	1uF		10V
C620	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C621	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C622	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C623	1-126-947-11	ELECT	47uF	20%	35V
C651	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C652	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C653	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C654	1-135-177-21	TANTAL. CHIP	1uF	10%	25V
C655	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C656	1-135-176-21	TANTAL. CHIP	0.68uF	10%	35V
C657	1-135-073-00	TANTAL. CHIP	0.33uF	10%	35V
C658	1-135-145-11	TANTAL. CHIP	0.47uF	20%	35V
C659	1-135-072-21	TANTAL. CHIP	0.22uF	10%	35V
C660	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C901	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C902	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C903	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C904	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C905	1-136-165-00	FILM	0.1uF	5%	50V

MAIN

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN101	1-506-467-11	PIN, CONNECTOR 2P	
CN102	1-506-469-11	PIN, CONNECTOR 4P	
CN103	1-506-467-11	PIN, CONNECTOR 2P	
CN401	1-568-229-11	SOCKET, CONNECTOR 8P (CONTROL UNIT)	
CN402	1-506-467-11	PIN, CONNECTOR 2P	
CN502	1-569-315-11	SOCKET, CONNECTOR 5P	
CN601	1-506-469-11	PIN, CONNECTOR 4P	
* CN602	1-564-001-11	PIN, CONNECTOR 2P	
		< DIODE >	
D101	8-719-812-41	LED TLR124 (REC)	
D102	8-719-938-67	LED GL3EG8 (OPR)	
D103	8-719-987-69	DIODE DAN217	
D302	8-719-914-43	DIODE DAN202K	
D303	8-719-914-44	DIODE DAP202K	
D401	8-719-914-44	DIODE DAP202K	
D402	8-719-914-43	DIODE DAN202K	
D404	8-719-914-44	DIODE DAP202K	
D405	8-719-914-44	DIODE DAP202K	
D601	8-719-027-97	DIODE MA3033	
D603	8-719-049-53	DIODE MA3039-(TX)	
D604	8-719-105-91	DIODE RD5.6M-B2	
		< FERRITE BEAD >	
FB901	1-500-329-21	INDUCTOR, FERRITE BEAD	
FB902	1-500-329-21	INDUCTOR, FERRITE BEAD	
FB903	1-500-329-21	INDUCTOR, FERRITE BEAD	
		< IC >	
IC101	8-759-467-54	IC MM1315BD	
IC102	8-759-008-67	IC MC14066BF	
IC401	6-805-608-01	IC uPD780111GB-017-8ES-A	
IC602	8-759-822-09	IC LB1641	
IC604	8-759-008-67	IC MC14066BF	
IC651	8-759-008-67	IC MC14066BF	
IC652	8-759-996-13	IC TLP326ADB	
		< JACK >	
J101	1-566-740-11	JACK (MIC (PLUG IN POWER))	
J102	1-507-896-00	JACK, HEADPHONE (EAR)	
		< JUMPER RESISTOR >	
JC901	1-216-295-11	SHORT CHIP 0	
		< PHOTO INTERRUPTER >	
PH401	8-719-980-75	PHOTO INTERRUPTER GP2S24-C	
		< TRANSISTOR >	
Q101	8-729-900-52	TRANSISTOR DTC114YK	
Q102	8-729-900-52	TRANSISTOR DTC114YK	
Q103	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q104	8-729-901-46	TRANSISTOR DTA114YK	
Q105	8-729-901-46	TRANSISTOR DTA114YK	
Q106	8-729-900-52	TRANSISTOR DTC114YK	
Q107	8-729-901-46	TRANSISTOR DTA114YK	
Q108	8-729-900-52	TRANSISTOR DTC114YK	
Q110	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q111	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q112	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q302	8-729-900-52	TRANSISTOR DTC114YK	
Q303	8-729-900-52	TRANSISTOR DTC114YK	
Q304	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q305	8-729-900-52	TRANSISTOR DTC114YK	
Q306	8-729-901-46	TRANSISTOR DTA114YK	
Q403	8-729-421-22	TRANSISTOR UN2211	
Q508	8-729-900-52	TRANSISTOR DTC114YK	
Q601	8-729-900-52	TRANSISTOR DTC114YK	
Q602	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q603	8-729-101-07	TRANSISTOR 2SB798-DL	
Q604	8-729-901-46	TRANSISTOR DTA114YK	
Q605	8-729-900-52	TRANSISTOR DTC114YK	
Q606	8-729-900-52	TRANSISTOR DTC114YK	
Q607	8-729-900-52	TRANSISTOR DTC114YK	
Q608	8-729-900-52	TRANSISTOR DTC114YK	
Q609	8-729-900-52	TRANSISTOR DTC114YK	
Q613	8-729-900-52	TRANSISTOR DTC114YK	
Q617	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q618	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q651	8-729-900-52	TRANSISTOR DTC114YK	
Q652	8-729-900-52	TRANSISTOR DTC114YK	
Q653	8-729-900-52	TRANSISTOR DTC114YK	
Q654	8-729-900-52	TRANSISTOR DTC114YK	
		< RESISTOR >	
R101	1-216-822-11	METAL CHIP 1.2K 5% 1/10W	
R102	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R103	1-216-830-11	METAL CHIP 5.6K 5% 1/10W	
R104	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R105	1-216-823-11	METAL CHIP 1.5K 5% 1/10W	
R106	1-216-835-11	METAL CHIP 15K 5% 1/10W	
R107	1-216-864-11	SHORT CHIP 0	
R108	1-216-813-11	METAL CHIP 220 5% 1/10W	
R110	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R111	1-216-841-11	METAL CHIP 47K 5% 1/10W	
R112	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R114	1-216-793-11	METAL CHIP 4.7 5% 1/10W	
R115	1-216-819-11	METAL CHIP 680 5% 1/10W	
R116	1-216-825-11	METAL CHIP 2.2K 5% 1/10W	
R117	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R118	1-216-793-11	METAL CHIP 4.7 5% 1/10W	
R119	1-216-811-11	METAL CHIP 150 5% 1/10W	
R120	1-216-854-11	METAL CHIP 560K 5% 1/10W	
R121	1-216-805-11	METAL CHIP 47 5% 1/10W	
R122	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R123	1-216-835-11	METAL CHIP 15K 5% 1/10W	
R124	1-216-813-11	METAL CHIP 220 5% 1/10W	
R136	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R137	1-216-841-11	METAL CHIP 47K 5% 1/10W	
R138	1-216-854-11	METAL CHIP 560K 5% 1/10W	
R139	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R140	1-216-809-11	METAL CHIP 100 5% 1/10W	
R141	1-216-837-11	METAL CHIP 22K 5% 1/10W	
R142	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	

Ref. No.	Part No.	Description			Remark
R143	1-216-834-11	METAL CHIP	12K	5%	1/10W
R144	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R301	1-216-819-11	METAL CHIP	680	5%	1/10W
R302	1-216-841-11	METAL CHIP	47K	5%	1/10W
R303	1-216-797-11	METAL CHIP	10	5%	1/10W
R304	1-216-864-11	SHORT CHIP	0		
R305	1-216-841-11	METAL CHIP	47K	5%	1/10W
R306	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R307	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R308	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R309	1-216-861-11	METAL CHIP	2.2M	5%	1/10W
R310	1-216-833-11	METAL CHIP	10K	5%	1/10W
R311	1-216-833-11	METAL CHIP	10K	5%	1/10W
R312	1-216-838-11	METAL CHIP	27K	5%	1/10W
R313	1-216-843-11	METAL CHIP	68K	5%	1/10W
R314	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R315	1-216-845-11	METAL CHIP	100K	5%	1/10W
R316	1-216-845-11	METAL CHIP	100K	5%	1/10W
R318	1-216-813-11	METAL CHIP	220	5%	1/10W
R319	1-216-817-11	METAL CHIP	470	5%	1/10W
R320	1-216-841-11	METAL CHIP	47K	5%	1/10W
R401	1-216-845-11	METAL CHIP	100K	5%	1/10W
R403	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R404	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R405	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R406	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R407	1-216-857-11	METAL CHIP	1M	5%	1/10W
R408	1-216-841-11	METAL CHIP	47K	5%	1/10W
R411	1-216-813-11	METAL CHIP	220	5%	1/10W
R413	1-216-845-11	METAL CHIP	100K	5%	1/10W
R415	1-216-821-11	METAL CHIP	1K	5%	1/10W
R418	1-216-821-11	METAL CHIP	1K	5%	1/10W
R419	1-216-821-11	METAL CHIP	1K	5%	1/10W
R420	1-216-845-11	METAL CHIP	100K	5%	1/10W
R421	1-216-845-11	METAL CHIP	100K	5%	1/10W
R422	1-216-845-11	METAL CHIP	100K	5%	1/10W
R423	1-216-845-11	METAL CHIP	100K	5%	1/10W
R424	1-216-841-11	METAL CHIP	47K	5%	1/10W
R605	1-216-833-11	METAL CHIP	10K	5%	1/10W
R606	1-216-833-11	METAL CHIP	10K	5%	1/10W
R607	1-216-833-11	METAL CHIP	10K	5%	1/10W
R608	1-216-833-11	METAL CHIP	10K	5%	1/10W
R609	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R628	1-216-841-11	METAL CHIP	47K	5%	1/10W
R629	1-216-813-11	METAL CHIP	220	5%	1/10W
R630	1-216-809-11	METAL CHIP	100	5%	1/10W
R631	1-216-809-11	METAL CHIP	100	5%	1/10W
R639	1-216-809-11	METAL CHIP	100	5%	1/10W
R640	1-216-809-11	METAL CHIP	100	5%	1/10W
R651	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R652	1-216-865-11	METAL CHIP	3K	5%	1/10W
R653	1-216-834-11	METAL CHIP	12K	5%	1/10W
R654	1-216-836-11	METAL CHIP	18K	5%	1/10W
R655	1-216-843-11	METAL CHIP	68K	5%	1/10W
R656	1-216-832-11	METAL CHIP	8.2K	5%	1/10W
R657	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R659	1-216-833-11	METAL CHIP	10K	5%	1/10W
R660	1-216-833-11	METAL CHIP	10K	5%	1/10W
R661	1-216-833-11	METAL CHIP	10K	5%	1/10W
R901	1-216-833-11	METAL CHIP	10K	5%	1/10W
R902	1-216-849-11	METAL CHIP	220K	5%	1/10W
R903	1-216-811-11	METAL CHIP	150	5%	1/10W
R904	1-216-833-11	METAL CHIP	10K	5%	1/10W
R950	1-216-121-11	RES-CHIP	1M	5%	1/10W
R951	1-216-057-00	RES-CHIP	2.2K	5%	1/10W

< VARIABLE RESISTOR >

RV101	1-227-711-11	RES, VAR, CARBON 10K (VOLUME)			
RV651	1-225-188-11	RES, VAR, CARBON 10K (SPEED CONTROL)			
RV652	1-237-723-11	RES, ADJ, CARBON 4.7K			
RV653	1-237-723-11	RES, ADJ, CARBON 4.7K			

< SWITCH >

S101	1-552-334-00	SWITCH, BAND CHANGER (TONE)			
S401	1-554-303-21	SWITCH, KEYBOARD (▶▶ FF)			
S402	1-554-303-21	SWITCH, KEYBOARD (▶ PLAY)			
S403	1-554-303-21	SWITCH, KEYBOARD (■ STOP)			
S404	1-554-303-21	SWITCH, KEYBOARD (◀◀ REW)			
S405	1-572-624-11	SWITCH, SLIDE (STOP/REC)			
S406	1-554-277-00	SWITCH, SLIDE (REV TIME)			
S407	1-552-334-00	SWITCH, BAND CHANGER (SPEED)			

< VIBRATOR >

X401	1-795-054-51	VIBRATOR, CERAMIC (4.19MHz)			

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POWER BOARD
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< CAPACITOR >

C407	1-126-936-11	ELECT	3300uF	20%	16V
C501	1-128-551-11	ELECT	22uF	20%	63V
C502	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C503	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C504	1-126-936-11	ELECT	3300uF	20%	16V

< CONNECTOR >

CN403	1-506-481-11	PIN, CONNECTOR 2P			
CN503	1-569-299-11	SOCKET, CONNECTOR (L TYPE) 5P			

< JACK >

CN501	1-562-961-12	JACK (DC IN 9V)			

< DIODE >

D403	8-719-210-33	DIODE EC10DS2			
D501	8-719-210-33	DIODE EC10DS2			

< TRANSISTOR >

Q401	8-729-101-07	TRANSISTOR 2SB798-DL			
Q402	8-729-403-17	TRANSISTOR XN1215			
Q404	8-729-101-07	TRANSISTOR 2SB798-DL			
Q405	8-729-900-52	TRANSISTOR DTC114YK			
Q406	8-729-140-75	TRANSISTOR 2SD999-CLCK			
Q407	8-729-101-07	TRANSISTOR 2SB798-DL			
Q408	8-729-900-52	TRANSISTOR DTC114YK			

POWER

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R402	1-216-041-00	RES-CHIP	470	5%	1/10W
R409	1-216-045-00	RES-CHIP	680	5%	1/10W
R410	1-216-073-00	RES-CHIP	10K	5%	1/10W
R412	1-216-045-00	RES-CHIP	680	5%	1/10W
R414	1-216-049-11	RES-CHIP	1K	5%	1/10W
**********					
		MISCELLANEOUS			
		**********			
15	1-769-840-11	WIRE (FLAT TYPE) (5 CORE)			
51	1-548-599-21	COUNTER, TAPE (SMALL TYPE)			
HRPE901	1-500-317-11	HEAD, MAGNETIC (REC/PB/ERASE)			
IC501	8-759-701-75	IC NJM7805FA			
M901	1-698-452-14	MOTOR, DC (FWD)			
M902	X-3371-751-1	MOTOR ASSY, FR (FF/REW)			
MIC901	1-542-092-11	MICROPHONE, ELECTRET CONDENSER (MIC)			
PM901	1-454-486-12	SOLENOID, PLUNGER			
S901	1-554-385-00	SWITCH, MICRO (ERASE PROOF)			
SP901	1-529-379-12	SPEAKER (5cm)			
**********					
		ACCESSORIES			
		**********			
⚠	1-463-691-11	ADAPTOR, AC (AC-930F) (US)			
⚠	1-473-998-11	ADAPTOR, AC (AC-930F) (AEP)			
	1-771-219-16	CONTROL UNIT, FOOT (FS-80)			
	3-750-533-16	MANUAL, INSTRUCTION (ENGLISH,FRENCH, GERMAN) (2000:AEP)			
	3-750-533-24	MANUAL, INSTRUCTION (ENGLISH) (2000:US)			
	3-754-128-14	MANUAL, INSTRUCTION (ENGLISH,FRENCH, GERMAN) (2020:AEP)			
	3-754-128-24	MANUAL, INSTRUCTION (ENGLISH) (2020:US)			
	8-953-098-90	HEADPHONE (DE-45)			
	A-3010-245-A	CONTROL UNIT, HAND (HU-25) (2020)			
	A-3041-641-A	CRADLE ASSY (HU-25) (2020)			

MEMO

REVISION HISTORY

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Ver.	Date	Description of Revision
	1989. 06	M-2000: New (9-953-888-11)
	1990. 02	M-2000: Revision-1 (9-953-888-12) Canadian model addition.
	1991. 06	M-2000: Revision-2 (9-953-888-13) Australian model addition.
	1991. 08	M-2000: Supplement-1 (9-953-888-81) Main and power boards change.
	1995. 06	M-2000: Supplement-2 (9-953-888-82) Change notice for Circuit.
	1996. 01	M-2000: Supplement-3 (9-953-888-83) Change of Circuit.
	1996. 02	M-2000: Correction-1 (9-953-888-91)
	1997. 07	M-2000: Supplement-4 (9-953-888-84) Change of foot control unit.
	1991. 10	M-2020: NEW (9-956-724-11)
	1997. 07	M-2020: Supplement-1 (9-956-724-81) Change of foot control unit.
	1997. 07	FS-80: New (9-923-243-11)
1.1	2005. 08	All the above-mentioned service manuals are contained. (The content of 9-953-888-84, -91, 9-956-724-11 and -81 has been included.) Supplement-5: Specification change by measures of environmental problems.